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SENSITIVE AREA STUDY
AND
MITIGATION PLAN

FOR

RIO VISTA
DUVALL, WA

Wetland Resources, Inc. Project #15135

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1.0 SITE DESCRIPTION

Wetland Resources, Inc. conducted a site visit in September of 2013 in order to verify the previous wetland delineation carried out in June of 2007 on the 12.72-acre project site located northwest and southwest of the intersection of NE 143th Place and 272nd Place SE in the city of Duvall, Washington. The site is located as a portion of Section 24, Township 26N, Range 6E, W.M. The applicant is proposing a multi-lot residential development for this property.

The property consists of four parcels configured in an L-shape. The site is bordered by forests to the south and single-family residences to the west, north, and east. Each of the four parcels included within this project site contain a single-family residence with associated infrastructure. On the two westernmost parcels, the site is pasture and is situated on a gently north-facing slope. On the two easternmost parcels, the site is covered by forest. The site is bisected by NE 143rd Place, which separates the three northern parcels from the single parcel in the southeast.

Two wetlands are located on site, and are labeled as Wetlands A and B. Wetland A is located in the northwestern portion of the site, extending offsite to the north. Wetland B is located in the southeastern portion of the property.

2.0 PROJECT DESCRIPTION

The applicant is proposing to develop a multi-lot residential development with associated access roads, utilities, and trails on this property. No impacts to wetlands are proposed as part of this plan. Buffer reduction and buffer impact are proposed to occur adjacent to Wetland A. Buffer averaging is proposed adjacent to Wetland B. To mitigate for these impacts, wetland and buffer enhancement are proposed, as well as additional buffer creation and buffer averaging.

2.1 BUFFER REDUCTION – WETLAND A

A portion of the buffer of Wetland A will be reduced per Duvall Municipal Code (DMC) 14.42.210(B). The buffer areas proposed for reduction are currently degraded and consist of mixed pasture and thickets of Himalayan blackberry. There are no significant habitat features or functions within the outer 50 percent of the buffer that could be impacted. In no places is the buffer of Wetland A proposed to be reduced to less than 30 feet, fifty percent of the standard 60-foot buffer.

As part of the proposed buffer reduction plan, short-term water quality impacts will be prevented through installation of an erosion control fence. Noise impacts will be temporary and will occur only during normal business hours. While nesting and breeding times vary among bird species in the northwest, noise impacts can generally be mitigated if construction begins after mid-July.

The areas proposed to be retained as protective buffers shall be clearly marked in the field with temporary orange construction fencing. If necessary, a temporary stormwater detention and treatment will be in place and functioning throughout the duration of the construction.

Additional long-term protection measures will include directing lights from buildings, streets, and driveways away from the wetland and buffer area as well as installing a permanent fence and sensitive area signs along the proposed buffer boundary.

A buffer enhancement plan will be implemented throughout the reduced buffer areas. Buffer enhancement will include removal of invasive species and planting the areas with a diversity of native trees and shrubs.

Overall, these buffer reductions will meet the requirements under Chapter 14.42.210.B.3 as well as all other goals and objectives under Chapter 14.42.

2.2 BUFFER IMPACTS FOR STORMWATER DRAINAGE AND DISCHARGE – WETLAND A

2,315 square feet of buffer adjacent to Wetland A are proposed to be temporarily impacted to allow for the installation of storm drainage conveyance pipes. Following pipe installation, the soils will be restored to pre-disturbed grade and then planted with native shrubs. Vegetation to be disturbed in this manner primarily consists of pasture grasses and Himalayan Blackberry. No significant trees are expected to be removed from the installation of the storm drainage pipes. As such, minimal impacts to wetland or buffer functions are expected. Stormwater from the southern parcel will also be discharged through this drainage system as it is not feasible to discharge it into the buffer of Wetland B.

In addition to the temporary impacts described above, installation of stormwater dispersion trenches will result in permanent impacts to 1,800 square feet of the buffer of Wetland A. These impacts are unavoidable given the topographic constraints of the property and cannot be sited further from the wetland boundary while still functioning effectively. Mitigation for these proposed impacts will be achieved through enhancement of the adjacent wetland at a 4:1 ratio (enhancement:impact).

Based on these conditions, these activities appear to be allowed under DMC 14.12.220(G) since there is no feasible alternative for placement of these stormwater facilities.

2.3 BUFFER IMPACTS FOR PEDESTRIAN TRAIL – WETLAND A

The applicant is proposing to install a non-motorized trail around the perimeter of the on-site portion of Wetland A in order to provide recreational and educational opportunities for residents and neighbors of the proposed development. In the City of Duvall, trails are allowed to be located in buffers pursuant to the regulations in Duvall Municipal Code (DMC) 14.42.220. This trail will result in 4,696 square feet of permanent buffer impact. The trail will be 4 feet wide and constructed of natural materials such as wood chips. Construction of the trail will avoid existing native trees and shrubs wherever possible. NGPA signs will be installed at the entrance of the trail. Enhancement plantings will be installed on either side of the trail to provide added protection and vegetative screening. Mitigation for this proposed impact will be achieved through enhancement of the adjacent wetland at a 4:1 ratio (enhancement:impact).

2.4 BUFFER AVERAGING – WETLAND B

The applicant is proposing to average a portion of the buffer of Wetland B as part of the development proposal. DMC 14.42.210(C) states that buffer width averaging may be allowed if the averaging plan meets certain requirements. These requirements are listed below in italics, with WRI's explanation of how this project meets each requirement in standard text:

1. *The buffer averaging does not reduce the functions or values of the wetland as described in subsection (B)(1) of this section.*

   Both the reduced and added buffers support the same vegetative species and structures. There will be a net gain in buffer area, thereby not resulting in diminished functions and values.

2. *The total area contained in the buffer area after averaging is no less than that which would be contained within the standard buffer, and all increases in buffer dimension for averaging must be generally parallel to the wetland boundary;*

   The proposed buffer averaging plan provides a net gain of buffer area for the on-site wetland. For 1,480 square feet of buffer reduction, a total of 2,314 square feet of buffer will be added. This is a 1.6:1 addition to reduction ratio and a net increase of 834 square feet of buffer on this site.

3. *The wetland contains variations in sensitivity due to existing physical characteristics or the character of the buffer varies in slope, soils, or vegetation;*

   Levels of sensitivity in the buffer of Wetland B vary significantly, with forest to the east and south, pasture to the west, and NE 143rd Pl to the north.

4. *The buffer of a Category I or II wetland may be reduced by up to twenty-five (25) percent of the required buffer if the criteria in subsection C of this section are met;*

   Buffer averaging will take place only in the outer 25 percent of the on-site buffer.

5. *The buffer of a Category III or IV wetland may be reduced by up to fifty (50) percent of the required buffer;*

   N/A

6. *The applicant implements all reasonable measures to reduce the adverse effects of adjacent land uses and ensure no net loss of wetland functions and values in conjunction with a sensitive area study and mitigation plan. The specific measures that shall be implemented include, but are not limited to, those in subsection (B)(4) of this section.*

   The on-site portions of this buffer are already composed of native forest that would not largely benefit from enhancement. Other mitigation measures outlined in the above section "Buffer Reduction – Wetland A" will be implemented in this area as well.

2.5 PERMANENT BUFFER IMPACTS FOR FRONTAGE IMPROVEMENTS

Required frontage improvements to NE 143rd Place and 272nd Place NE will result in 3,368 square feet of permanent buffer impact. These frontage improvements are required by the City of Duvall as part of the proposed development project on this site, and appear to be allowed under DMC 14.42.220.D since there is no feasible alternative location for road improvements. Since impacts will be permanent, mitigation measures are required. 2,643 square feet adjacent to Wetland A are proposed to be dedicated as buffer as mitigation for these impacts.

3.0 REVIEW OF EXISTING INFORMATION

Before conducting the on-site investigation, a literature review was performed to identify records of wetlands and streams within the project area. The following information was examined:

- National Wetlands Inventory map of project area - online version located at: http://www.fws.gov/wetlands/Data/mapper.html)
- *Web Soil Survey* (USDA) located at: http://www.or.nrcs.usda.gov/pnw_soil/wa_reports.html
- King County Interactive Mapping Tool - "IMAP": http://www.kingcounty.gov/operations/GIS/Maps/iMAP.aspx
- WDFW Salmonscape Mapper located at: http://apps.wdfw.wa.gov/salmonscape/map.html
- National List of Vascular Plant Species that Occur in Wetlands: 1996 National Summary Indicator by Region and Subregion (USFWS, May 9, 2012)
- WDFW Priority Habitats and Species Maps – online version located at: http://wdfw.wa.gov/mapping/phs/

4.0 WETLAND CLASSIFICATION - COWARDIN SYSTEM

According to the Cowardin Classification System, as described in Classification of Wetlands and Deepwater Habitats of the United States, the subject wetland and stream are characterized as:

Wetland A: Palustrine: Emergent, Persistent, Saturated.

Wetland B: Palustrine: Forested, Broad-leaved Deciduous, Saturated.

5.0 WETLAND AND STREAM CLASSIFICATION – CITY OF DUVALL

Pursuant to the City of Duvall Code, Section 14.42.200, the on-site wetlands are classified as follows. Wetlands are classified using the Washington State Department of Ecology (DOE) *Wetland Rating Form – Western Washington* (Version 2, 10.2008).

Wetland A (Category III):
Wetland A is a degraded depressional wetland in the northern part of the site, extending offsite to the north. It receives a total score for functions of 41, including a habitat value of 16 on the DOE Wetland Rating Form (2008). Wetlands attaining a total score for functions of 30-50 on the DOE Wetland Rating Form are classified as Category III. Because this wetland scored fewer than 19 points for habitat functions, it is dedicated a 60-foot protective buffer in the city of Duvall.

Wetland B (Category II): Wetland B is a forested depressional wetland located partially on in the southern edge of the southern parcel, but mostly extends off-site to the west. It receives a total score for functions of 64 with a habitat value of 22 points on the DOE Wetland Rating Form (2008). Wetland B is classified as a Category II wetland. Because it receives a habitat score of 22 points, it is dedicated a 100-foot buffer in the city of Duvall.

6.0 WETLAND DETERMINATION REPORT

6.1 METHODS

The 2010 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0), (2010 Regional Supplement) was used for this determination, as required by the City of Duvall during the permitting process. Under this method, the process for making a wetland determination is based on three sequential steps:

1) Examination of the site for hydrophytic vegetation (species present and percentage cover).

2) If hydrophytic vegetation is found, then the presence of hydric soils is determined.

3) Determination of the presence of wetland hydrology in the area examined under the first two steps.

6.2 WETLAND VEGETATION CRITERIA:

The 2010 Regional Supplement defines hydrophytic vegetation as "assemblage of macrophytes that occurs in areas where inundation or soil saturation is either permanent or have sufficient frequency and duration to influence plant occurrence." Field indicators were used to determine whether the vegetation meets the definition for hydrophytic vegetation.

6.3 WETLAND SOILS CRITERIA AND MAPPED DESCRIPTION:

The 2010 Regional Supplement defines hydric soils as "soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part." Field indicators were used to determine whether a given soil meets the definition for hydric soils.

The soils underlying the site are mapped in the NRCS Web Soil Survey as Tokul Gravelly Loam 6-15 percent slopes.

Tokul Gravelly Loam, 6-15 percent slopes is described as moderately deep, moderately well drained soil on till plains. This soil formed in glacial till and volcanic ash. Typically, the surface is covered with a mat of leaves, twigs, and decomposed litter about 2 inches thick. The surface layer is dark brown gravelly loam about 4 inches thick. The subsoil is brown, strong brown, and dark yellowish brown gravelly loam about 18 inches thick. A hardpan is at a depth of about 31 inches. Permeability of this soil is moderate to the hardpan and very slow through it. Available water capacity is moderate. Included in this unit are small areas of Pastik and Winston soils on terraces and outwash plains; Nargar soils on high terraces, terrace escarpments, and outwash plains; and Ragnar soils on outwash plains. Included areas make up about 25 percent of the total acreage.

6.4 HYDROLOGY CRITERIA

Wetland hydrology encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface for a sufficient duration during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on characteristics of vegetation and soils due to anaerobic and chemically reducing conditions, respectively.

Additionally, areas which are seasonally inundated and/or saturated to the surface for a consecutive number of days ≥ 12.5 percent of the growing season are wetlands, provided the soil and vegetation parameters are met. Areas inundated or saturated between five and 12.5 percent of the growing season in most years may or may not be wetlands. Areas saturated to the surface for less than five percent of the growing season are non-wetlands. Field indicators were used to determine whether wetland hydrology parameters were met on this site.

7.0 BOUNDARY DETERMINATION FINDINGS/RESULTS

On-site Wetlands

Wetland A:

Wetland A is located in the northwestern portion of the property. Multiple historic drainage ditches exist onsite, seasonally conveying hydrology through the wetland and offsite to the north. The applicant does not propose to fill or plug these ditches as part of the proposed project. Vegetation in this wetland is represented by Pacific willow (*Salix lucida*, FacW+), Himalayan blackberry (*Rubus armeniacus*, FacU), soft rush (*Juncus effusus*, FacW), and slough sedge (*Carex obnuta*, Obl).

Soils in Wetland A have a Munsell color of very dark grey (10YR 3/1) with a texture of gravelly sandy loam from 0 to 18 inches below the surface. Soils in Wetland A were saturated at the time of our June 2007 site investigation. In addition, groundwater monitoring wells were installed and observed during the spring 2008 growing season (See Appendix C: Groundwater Monitoring Data). Wetland conditions and boundaries were verified during WRI's September 2013 site visit.

Wetland B:
Wetland B is located in the southeastern portion of the property. Vegetation in this wetland is represented by western red cedar (*Thuja plicata*, Fac), red alder (*Alnus rubra*, Fac), pacific willow, salmonberry (*Rubus spectabilis,* Fac), and creeping buttercup (*Ranunculus repens*, FacW).

Soils in Wetland B have a Munsell color of very dark grey (10 YR 3/1) with a texture of sandy loam from 0 to 18 inches below the surface. Soils were moist during our June 2007 site investigation. Wetland conditions and boundaries were verified with ESA Adolfson, during WRI's September 2013 site visit.

Non-Wetland Areas
Non-wetland areas include portions of the onsite pasture areas and forested areas. Typical vegetation in the non-wet pasture areas is represented by typical pasture grasses, Himalayan blackberry, hairy cat's ear (*Hypochaeris radicata*, NL), red clover (*Trifolium pratense*, FacU), narrowleaf plantain (*Plantago lanceolata*, Fac), and white clover (*Trifolium repens*, Fac). Typical vegetation in the non-wet forested areas is represented by western red cedar (*Thuja plicata,* Fac), bigleaf maple (*Acer macrophyllum*, FacU), red alder (*Alnus rubra*, Fac), vine maple (*Acer circinatum*, Fac), himalayan blackberry, salmonsberry (*Rubus spectabilis*, Fac), and bracken fern (*Pteridium aquilinum*, FacU).

Soils in the upland forested areas have a Munsell color of dark brown (10YR 3/2) with a texture of sandy loam from 0 to 18 inches below the surface. Soils were dry during our June 2007 site visit. Site conditions were verified during WRI's September 2013 site visit.

8.0 WETLAND FUNCTIONS AND VALUES ASSESSMENT

8.1 METHODOLOGY
The methodology for this functions and values assessment is based on professional opinion developed through past field analyses and interpretation. This assessment pertains specifically to the on-site wetland systems, but is typical for assessments of similar systems common to western Washington.

8.2 FUNCTIONAL COMPONENTS

Wetlands in western Washington perform a variety of ecosystem functions. Included among the most important functions provided by wetlands are storm water control, water quality improvement, fish and wildlife habitat, aesthetic value, recreational opportunities, and education. The most commonly assessed functions and their descriptions are listed below. Assessments of these functions for the project site are provided in the "Analysis" section of this report.

Hydrologic Functions

Wetlands often function as natural water storage areas during periods of precipitation and flooding. By storing water that otherwise might be channeled into open flow systems, wetlands can attenuate or modify potentially damaging effects of storm events, reducing erosion and peak flows to downstream systems. Additionally, the soils underlying wetlands are often less permeable, providing long-term storage of stormwater or flood flow and controlling baseflows of downstream systems. Stormwater storage capacity and flood flow attenuation are generally a function of the size of the wetland and their topographic characteristics.

Water Quality

Surface water quality improvement is another evaluated function. Surface runoff during periods of precipitation increases the potential for sediments and pollutants to enter surface water. Wetlands improve water quality by acting as filters as water passes through them, trapping sediments and pollutants from surface water. Ponded areas within depressional wetlands also allow sediments to drop out of suspension, thereby increasing water quality. As development increases, the potential for polluted water to reach wetlands and streams also increases. Unnaturally high inputs of pollutants, which are often found in urbanized areas, along with the size of the wetlands and the vegetation structure within them are the main limiting factors of this function.

Wildlife Habitat

Wetlands have potential to provide diverse habitat for aquatic, terrestrial, amphibious, and avian species for nesting, rearing, resting, cover, and foraging. Wildlife species are commonly dependent upon a variety of intermingled habitat types, including wetlands, adjacent uplands, large bodies of water, and movement corridors between them. Human intrusion, including development within and adjacent to wetlands, and impacts to movement corridors are the most limiting factors for wildlife habitat functions.

8.3 ANALYSIS

Hydrologic control and water quality improvement functions are provided in both Wetlands A and B. Wetland A received a moderately low score for these functions on the DOE Rating Form, while the presence of organic soil and more seasonal ponding in Wetland B increases its ability to improve water quality. Intermittently flowing outlets prevent them from holding back large volumes of stormwater. Based on the physical characteristics of the wetlands, hydrologic control and water quality improvement functions are limited for Wetland A and moderate for Wetland B.

These wetlands have the potential to provide habitat for many species of wildlife. Birds, small mammal species, and amphibians primarily use the site. The wetlands are connected to additional wetlands off-site, and may serve as a wildlife corridor for medium-sized mammals, such as raccoon and opossum.

Due to the lack of habitat diversity and special features, Wetland A provides moderately low levels of habitat functions; while Wetland B provides moderate levels of habitat functions, as evidenced by its score of 22 points for habitat functions on the DOE Rating Form.

8.4 POST-MITIGATION FUNCTIONS AND VALUES

This mitigation plan calls for a substantial amount of habitat enhancement in both Wetland A and its buffer as well as a net increase in the amount of buffer dedicated around wetland B. The intent is to replace and improve lost functions associated with the on-site buffer reductions, trail, frontage improvements, and stormwater discharge facilities. In addition, the mitigation plan will improve the habitat value of Wetland A by increasing habitat interspersion and plant species diversity.

Currently, the areas proposed for enhancement consist of a mix of pasture, invasive blackberry, and a scattered mix of natives trees and shrubs. Through proper installation, the proposed enhancement plan will convert these pasture and blackberry-dominated areas to a diverse native scrub-shrub community. Over time, planted and pioneer trees will increase in size to create a complex forest community with multiple understory strata. The enhancement areas spread through the on-site portion of Wetland A will provide increased habitat interspersion and create seed sources, while creating shade to help suppress invasive species such as reed canarygrass and Himalayan blackberry.

The selected trees and shrubs will grow and mature under developed conditions to create valuable habitat for a variety of birds and small mammals that may utilize the area. Native trees provide shade, protection, food, nesting and a variety of other opportunities for wildlife species. Shade provided by the wetland planting will also provide thermal control for surface water in the wetland and existing drainage ditches, helping to keep it cool as it flows offsite to the north and eventually into down-gradient critical areas.

Averaging in the buffer of Wetland B will create an overall increase in the amount of area dedicated as buffer. This additional area will be mature forest, contiguous with undeveloped habitat to the south. Overall the value of the habitat provided by the buffer of Wetland B is expected to increase as a result of this mitigation plan.

The aesthetic value of the site will also improve through native vegetation enhancement. Fencing and signage will promote awareness of the importance in protecting the on-site native growth protection areas in this community.

Through proper implementation, the proposed mitigation measures are expected to adequately replace and improve the critical area functions. Overall, the proposed mitigation plan appears to meet the goals and objectives of the Duvall Sensitive Areas Regulations, Chapter 14.42.

9.0 WILDLIFE

Wetlands often contain resources such as food, water, thermal cover and hiding cover in close proximity, which wildlife species need to thrive. The following are typical avian species that may utilize this habitat: American crow (*Corvus brachyrhynchos),* American robin (*Turdus migratorius*), black-capped chickadee (*Poecile atricapillus*), bushtit (*Psaltriparus minimus*), common raven (*Corvus corax*), dark-eyed junco (*Junco hyemalis*), European starling (*Sturnus vulgaris*), northern flicker (*Colaptes auratus*), rufous-sided towhee (*Pipilo erythrophthalmus*), song sparrow (*Melospiza melodia*), steller's jay (*Cyanocitta stelleri*), and winter wren (*Troglodytes troglodytes*). Mammalian species that may utilize this site include bats (*Myotis spp.*), black-tailed deer (*Odocoileus hemionus columbianus*), coyotes (*Canis latrans*), deer mice (*Peromyscus maniculatus*), eastern cottontail rabbits (*Sylvilagus floridanus*), moles (*Scapanus spp*.), raccoons (*Procyon lotor*), shrews (*Sorex spp.),* skunks (*Mephitis spp.*), squirrels (*Sciuris griseus*, *Tamiasciurus douglasii*), and Virginia opossums (*Didelphis virginiana*). These lists are not intended to be all-inclusive, and may omit some bird, mammal or amphibian species that utilize the site. No threatened or endangered terrestrial species are known to be associated with the site.

10.0 WETLAND AND BUFFER ENHANCEMENT PLAN

A substantial amount of enhancement is proposed for this site, in both Wetland A and its buffer. All of the designated enhancement areas will be marked in the field with stakes and/or temporary fencing. The goal of enhancement is to increase habitat interspersion and species diversity in the wetland and buffer, and to provide long-term control of invasive plant species.

Prior to planting, invasive vegetation will be removed from the designated areas and exported off-site. Invasive/non-native species include, but are not limited to: Himalayan blackberry, cut leaf blackberry, reed canarygrass, Japanese knotweed, Canada thistle, and scot's broom. Control of reed canarygrass may involve first mowing to the ground, tilling the surface, and then laying paper or cardboard and a thick layer of mulch over the surface. Blackberry control can include cutting the plants to the ground, and carefully applying (by a licensed applicator) an approved herbicide such as glyphosate directly to the cut stocks. Control of knotweed should include injection of an approved herbicide such as glyphosate by a licensed applicator. Planting should occur no sooner than 10 days after applying an herbicide.

Temporarily disturbed buffer areas to be restored may be amended with appropriate topsoil mixture, as deemed necessary by the consulting biologist during the pre-construction meeting.

Following site preparations, the designated areas will be planted with the list of species recommended below. Plantings will be placed in an asymmetrical pattern, in groups of 2-3 like species, throughout the designated area. Proposed plant spacing in each of the planting areas will vary, depending on the amount of existing native vegetation currently established in those areas. A separate plant list is proposed for temporarily disturbed areas over underground stormwater conveyance pipes.

Temporary Buffer Impact Area (2,315 SF)

Common Name	Latin Name	Size	Spacing	Quantity
1.Snowberry	*Symphoricarpos albus*	1 gal	5'	24
2.Nootka rose	*Rosa nutkana*	1 gal	5'	23
3.Black Twinberry	*Lonicera involucrata*	1 gal	5'	23
4.Thimbleberry	*Rubus parviflorus*	1 gal	5'	23

Buffer Enhancement Area (47,232 SF)

Common Name	Latin Name	Size	Spacing	Quantity
1. Douglas fir	*Pseudotsuga menziesii*	1 gal	10'	112
2. Douglas fir	*Pseudotsuga menziesii*	8'	10'	27
3. Western Red Cedar	*Thuja plicata*	8'	10'	18
4. Big Leaf Maple	*Acer macrophyllum*	1 gal	10'	157
5. Red Alder	*Alnus rubra*	1 gal	10'	157
6.Snowberry	*Symphoricarpos albus*	1 gal	5'	300
7.Nootka rose	*Rosa nutkana*	1 gal	5'	317
8.Black Twinberry	*Lonicera involucrata*	1 gal	5'	200
9.Thimbleberry	*Rubus parviflorus*	1 gal	5'	205
10. Vine Maple	*Acer circinatum*	1 gal	5'	200
11. Beaked Hazelnut	*Corylus cornuta*	1 gal	5'	200

Wetland Enhancement Area (26,128)

Common Name	Latin Name	Size	Spacing	Quantity
1. Sitka spruce	*Picea sitchensis*	1 gal	10'	100
2. Red alder	*Alnus rubra*	1 gal	10'	50
3. Pacific willow	*Salix lasiandra*	1 gal	10'	50
4. Black cottonwood	Populus trichocarpa	1 gal	10'	61
5. Salmonberry	Rubus spectabilis	1 gal	5'	250
6. Red-osier dogwood	Cornus sericea	1 gal	5'	250
7. Pacific ninebark	Physocarpus capitatus	1 gal	5'	200
8. Black twinberry	*Lonicera involucrata*	1 gal	5'	184

11.0 GOALS AND OBJECTIVES

The main goal of this mitigation plan is to replace the functions and values lost from impacts to the wetland buffers. Specifically, loss of habitat functions associated with buffer reductions and impacts will be mitigated through significant buffer enhancement. To achieve this, two specific goals have been established and are listed below.

Goal 1: Improve the overall level of wildlife habitat and wetland functions on the site through enhancement of on-site buffer areas.

- **Objective 1:** Enhance 1.3 acres of buffer areas.

Goal 2: Protect existing wildlife habitat.

- **Objective 1:** Preserve approximately 3.7 acres of wetlands and buffer on the development site.
- **Objective 2:** Install fencing and/or signs to mark the boundaries of the protected areas.

12.0 PROJECT MONITORING PROGRAM

Requirements for monitoring project

1. Initial compliance report;
2. Semiannual inspections in the spring and fall of Years 1-3;
3. Annual inspections in the fall of Years 5;
4. Monitoring reports including final report (one report submitted in the fall of Years 1-3, & 5

Purpose for Monitoring

The purpose for monitoring this mitigation project shall be to evaluate its success. Success will be determined if monitoring shows at the end of 5 years that the definitions of success stated below are being met. The property owner shall grant access to the mitigation area for inspection and maintenance to the contracted landscaper or wetland specialist and the City of Duvall biologist during the period of the bond or until the project is evaluated as successful.

Monitoring

Monitoring shall continue for a period of five years or until performance standards are met, whether less than or more than five years. Per the approved plan, a formal monitoring report shall be submitted to the city according to the schedule provided in the table below.

Biannual Maintenance Visits	Monitoring Visit	Report due to City by:
Between May 1 and July 15 AND between September 1 and October 30	Between August 1 and October 15	November 30

Vegetation Monitoring

Sampling points or transects will be established for vegetation monitoring, and photo points established from which photos will be taken throughout the monitoring period. Permanent sampling points must be identified on the mitigation site plans in the first monitoring report (they may be drawn on approved plans by hand). Each sampling point shall detail the species found, as well as herbaceous, shrub, and tree coverage. Monitoring of vegetation sampling points shall occur annually between August 1 and October 30 (prior to leaf drop), unless otherwise specified. A tally of dead or missing plants will determine the mortality rate in the first year. Photographs will also be taken of each transect during each monitoring period so that progress can be tracked from year to year.

Photo points

Per King County Sensitive Area Mitigation Guidelines (2007), permanent photo points will be established within the Buffer Enhancement Area. Photographs will be taken from these points to visually record the condition of the proposed buffer restoration areas. Photos shall be taken annually between May 15 and October 30 (prior to leaf drop), unless otherwise specified. Overview photos will be taken from the same vantage points each year to document overall appearance of the mitigation area before, during, and after construction.

Monitoring Reports

Monitoring reports shall be submitted by November 30 of each year during the monitoring period. As applicable, monitoring reports must include descriptions / data for:

1) Site plan and vicinity map
2) Historic description of project, including date of installation, current year of monitoring, restatement of planting / enhancement goals, and performance standards
3) General appearance, health, mortality, colonization rates, percent cover, percent survival, volunteer plant species, invasive weeds, and/or other components deemed appropriate by the Department and a qualified consultant.
4) Wetland and buffer conditions, e.g., surrounding land use, use by humans, and/or wild and domestic creatures
5) Wildlife Monitoring Methods shall include visual sightings, aural observations, nests, scat, tracks, and/or other means deemed appropriate by the Department and a qualified consultant. Wildlife monitoring components shall include species counts, species diversity, breeding activity, habitat type, nesting activity, location, usage, and/or other components deemed appropriate by the Department and a qualified consultant
6) Assessment of nuisance / exotic biota and recommendations for management
7) Color photographs (4" x 6" in size) taken from permanent photo-points that shall be depicted on the monitoring report map

Criteria for Success

Upon completion of the proposed mitigation project, an inspection by a qualified biologist will be made to determine plan compliance. A compliance report will be supplied to the City of Duvall within 30 days after the completion of planting. A professional landscape professional or biological scientist will do condition monitoring of the plantings in the fall, annually. A written report describing the monitoring results will be submitted to the City of Duvall after each site inspection of each monitored year. Final inspection will occur five years after completion of this project. The contracted consultant will prepare a final monitoring report.

Performance Standards

1) 100 percent survival of all installed native trees and shrubs at the end of 1 year warranty period;
2) Percent tree and/or shrub cover in planting areas:
   - 10 percent by year 2
   - 20 percent by year 3
   - 45 percent by year 4
   - 60 percent by year 5 as measured by aerial cover via line-intercept method;
3) At least 2 native tree species and 4 native shrubs species shall be established in the mitigation area, with a minimum of 10 percent cover each by Year 5;
4) Up to 20 percent of any stratum can be composed of desirable native volunteers when measuring cover.
5) Bondholders are encouraged to maintain mitigation sites within these standards through the monitoring period to avoid corrective measures.

13.0 CONTINGENCY PLAN

If during any of the inspections, 20% of the plants are severely stressed, or it appears 20% may not survive, additional plantings of the same species may be added to the planting area. Elements of a contingency plan may include, but will not be limited to: more aggressive weed control, pest control, mulching, replanting with larger plant material, species substitution, soil amendments, and/or irrigation.

If there is a significant problem with the mitigation achieving its performance standards, the bondholder shall work with the City of Duvall to develop a Contingency Plan. Contingency plans can include, but are not limited to, regrading, additional plant installation, erosion control modifications to hydrology, and plant substitutions of type, size, quantity, and location. Such Contingency Plan shall be submitted to City by December 31 of any year when deficiencies are discovered.

14.0 SILT FENCING

Please refer to the project engineer's plans for detailed information on clearing and grading on this site.

Prior to beginning any development or mitigation activities, construction or siltation fencing shall be installed as described in the grading plan construction drawings. Silt fences shall be placed several feet outside of the wetlands. A pre-construction meeting between the City, the consulting wetland professional, contractor and equipment operator(s) will be held prior to any mitigation activities to inspect the location of siltation fencing.

All sedimentation control facilities shall be kept in place and functioning until vegetation is firmly established. Refer to site engineer's TESC plan for all erosion and sedimentation control details.

15.0 GRASS SEEDING

Any bare ground areas within the mitigation areas shall be seeded to the recommended certified grass seed mixture below or a similar mixture (approved by the consulting biologist and/City Biologist). Fertilizer shall not be used. Grass seed will be applied at a rate of 3lbs/1,000 SF.

Wetland Grass Seed Mixture

Common Name	Latin Name	% Seed by Weight
Meadow foxtail	*Alopecurus pratensis*	25%
Redtop bentgrass	*Agrostis gigantea*	25%
Beaked sedge	*Carex rostrata*	25%
Dagger-leaf rush	*Juncus ensiflius*	25%

Buffer Grass Seed Mixture

Common Name	Latin Name	% Seed by Weight
Red fescue	*Festuca rubra*	25%
Redtop bentgrass	*Agrostis gigantea*	25%
Idaho fescue	*Festuca idahoensis*	25%
Perennial rye	*Lolium perenne*	25%

16.0 TEMPORARY IRRIGATION SYSTEM

An above ground irrigation system capable of full head to head coverage of all planted areas will be provided. The temporary irrigation system shall either utilize control and point of connection (POC) from the site irrigation system, or shall include a separate POC and controller with a backflow prevention device per water jurisdiction inspection and approval. The system shall be zoned to provide optimal pressure and uniformity of coverage, as well as separation of areas of full sun or shade and slopes in excess of 5%.

The system shall be operational by June 15 (or at time of planting) and winterized by October 15. Irrigation shall be provided for the first two years of the monitoring period. The irrigation system shall be programmed to provide 1/2 inch of water per week (one cycle with two start times per week or every three days). A chart describing the location of all installed or open zones and corresponding controller numbers shall be placed inside the controller and given to the owner's representative.

17.0 PLANTING NOTES

Plant in the early spring or late fall and order all plants from a reputable nursery. Care and handling of all plant materials is extremely important to the overall success of the project. The origin of all plant materials specified in this plan shall be native plants, nursery grown in the Puget Sound region of Washington. Pre-dug plants may only be used upon approval of the City of Duvall representative. Some limited species substitution may be allowed, only with the agreement of the Landscape Designer, Wetland Biologist, and/or the City of Duvall representative. Larger plant stock may be used without consultation. Substitutions with smaller plant stock than specified may require consultation.

Handling
Plants shall be handled so as to avoid all damage, including breaking, bruising, root damage, sunburn, drying, freezing or other injury. Plants must be covered during transport. Plants shall not be bound with wire or rope in a manner that could damage branches. Protect plant roots with shade and wet soil in the time period between delivery and installation. Do not lift container stock by trunks, stems, or tops. Do not remove from containers until ready to plant. Water all plants as necessary to keep moisture levels appropriate to the species horticultural requirements. Plants shall not be allowed to dry out. All plants shall be watered thoroughly immediately upon installation. Soak all containerized plants thoroughly prior to installation. Bare root plants are subject to the following special requirements, and shall not be used unless planted between November 1 and March 1, and only with the permission of the Landscape Designer and the City of Duvall representative. Bare root plants must have enough fibrous root to insure plant survival. Roots must be covered at all times with mud and/or wet straw, moss, or other suitable packing material until time of installation. Plants whose roots have dried out from exposure will not be accepted at installation inspection.

Storage
Plants stored by the Permittee for longer than one month prior to planting shall be planted in nursery rows, and treated in a manner suitable to that species horticultural requirements. Plants must be reinspected by the Wetland Biologist and/or Landscape Designer prior to installation.

Damaged plants
Damaged, dried out, or otherwise mishandled plants will be rejected at installation inspection. All rejected plants shall be immediately removed from the site.

Plant Names
Plant names shall comply with those generally accepted in the native plant nursery trade. Any question regarding plant species or variety shall be referred to the Landscape Designer, Wetland Biologist or the City of Duvall representative. All plant materials shall be true to species and variety and legibly tagged.

Quality and condition
Plants shall be normal in pattern of growth, healthy, well-branched, vigorous, with well-developed root systems, and free of pests and diseases. Damaged, diseased, pest-infested, scraped, bruised, dried out, burned, broken, or defective plants will be rejected. Plants with pruning wounds over 1" in diameter will be rejected.

Roots
All plants shall be balled and burlapped or containerized, unless explicitly authorized by the Landscape Designer and/or Wetland Biologist. Rootbound plants or B&B plants with damaged, cracked or loose rootballs (major damage) will be rejected. Immediately before installation, plants' with minor root damage (some broken and/or twisted roots) must be root-pruned. Matted or circling roots of containerized plantings must be pruned or straightened and the sides of the root ball must be roughened from top to bottom to a depth of approximately half an inch in two to four places. Bare root plantings of woody material is allowed only with permission from the Landscape Designer, Wetland Biologist and/or the City of Duvall representative.

Sizes

Plant sizes shall be the size indicated in the plant schedule in approved plans. Larger stock may be acceptable provided that it has not been cut back to size specified, and that the root ball is proportionate to the size of the plant. Smaller stock may be acceptable, and under some circumstances preferable, based on site-specific conditions. Measurements, caliper, branching and balling and burlapping shall conform to the American Standard of Nursery Stock by the American Association of Nurserymen (latest edition).

Form
Evergreen trees, if used, shall have single trunks and symmetrical, well-developed form. Deciduous trees shall also have single trunks unless specified as multi-stem in the plan schedule. Shrubs shall have multiple stems, and be well-branched.

Timing of Planting
Unless otherwise approved by the City of Duvall representative, all planting shall occur between November 1 and March 1. Overall, the earlier plants go into the ground during the dormant period, the more time they have to adapt to the site and extend their root systems before the water demands of spring and summer occur.

Site conditions
The contractor shall immediately notify the Landscape Designer and/or Wetland Biologist of drainage or soil conditions likely to be detrimental to the growth or survival of plants. Planting operations shall not be conducted under the following conditions: freezing weather, when the ground is frozen, excessively wet weather, excessively windy weather, or in excessive heat.

Planting Pits
Planting pits shall be circular or square with vertical sides, and shall be 6" deeper and 12" larger in diameter than the root ball of the plant. Break up the sides of the pit in compacted soils. Set plants upright in pits, as illustrated in planting detail. Burlap shall be removed from the planting pit. Backfill shall be worked back into holes such that air pockets are removed without adversely compacting down soils.

Fertilizer and Pesticide
A covenant with the Home Owners Association will be established that limits the use of fertilizers and pesticides within the on-site wetlands, streams and associated buffers.

Water
Plants shall be watered midway through backfilling, and again upon completion of backfilling. For spring plantings (if approved), a rim of earth shall be mounded around the base of the tree or shrub no closer than the drip line, or no less than 30" in diameter, except on steep slopes or in hollows, as illustrated in planting detail. Plants shall be watered a second time within 24-48 hours after installation. The earthen rim / dam should be leveled prior to the second growing season.

Staking
Most shrubs and many trees DO NOT require any staking. If the plant can stand alone without staking in a moderate wind, do not use a stake. If the plant needs support, then strapping or webbing should be used as low as possible on the trunk to loosely brace the tree with two stakes (see Planting Detail). Do not brace the tree tightly or too high on the trunk. If the tree is unable to sway, it will further lose the ability to support itself. Do not use wire in a rubber hose for strapping as it exerts too much pressure on the bark. As soon as supporting the plant becomes unnecessary, remove the stakes. All stakes must be removed within two (2) years of installation.

Plant Location
Loosely tied white or other inconspicuous plastic flagging shall be placed next to or on each planting to assist in locating the plants while removing the competing non-native vegetation and to assist in locating the plants during the monitoring period.

Arrangement and Spacing
The plants shall be arranged in a pattern with the appropriate numbers, sizes, species, and distribution that are required in accordance with the approved plans. The actual placement of individual plants shall mimic natural, asymmetric vegetation patterns found on similar undisturbed sites in the area. Spacing of the plantings may be adjusted to maintain existing vegetation with the agreement of the Landscape Designer, Wetland Biologist, and/or the City of Duvall representative.

Inspection(s)
A biological professional shall be present on-site to inspect the plants prior to planting. Minor adjustments to the original design may be required prior to and during construction.

Mulch
A wood chip mulch (containing some green/vegetative material) will be placed around the base of each plant in a 3-foot radius and at a depth of 2 to 4 inches. Mulch shall not be allowed to contact plant stems in order to avoid plant decay and rot.

18.0 MAINTENANCE
The planting area may require periodic maintenance to replace vegetation mortality as necessary. Maintenance shall be required in accordance with King County Sensitive Areas Restoration Guidelines (2007) and approved plans. Maintenance may include, but not be limited to, removal of competing grasses (by hand if necessary), irrigation, replacement of plant mortality, and the replacement of mulch for each maintenance period. Chemical control, only if approved by the City of Duvall staff or representative, shall be applied by a licensed applicator following all label instructions.

Duration and Extent
In order to achieve performance standards, the Permittee shall have the mitigation area maintained for the duration of the monitoring period, 5 years. Maintenance will include watering, weeding around the base of installed plants, pruning, replacement, restaking, removal of all noxious and invasive plants. The Landscape Designer and/or Wetland Biologist shall direct all maintenance.

Survival
The Permittee shall be responsible for the health of 100% of all newly installed plants for one growing season after installation has been accepted by the City of Duvall staff (see Performance Standards). A growing season for these purposes is defined as occurring from spring to spring (March 15 to March 15, of the following year). For fall installation (often required), the growing season will begin the following spring. The Permittee shall replace any plants that are failing, weak, defective in manner of growth, or dead during this growing season, as directed by the Landscape Designer, Wetland Biologist, and/or the City of Duvall representative.

Installation Timing for Replacement Plants
Replacement plants shall be installed between September 15 and January 15, unless otherwise determined by the Landscape Designer, Wetland Biologist, and/or the City of Duvall representative.

Standards for Replacement Plants
Replacement plants shall meet the same standards for size and type as those specified for the original installation unless otherwise directed by the Landscape Designer, Wetland Biologist, and/or the City of Duvall representative.

Replanting
Plants that have settled in their planting pits too deep, too shallow, loose, or crooked shall be replanted as directed by the Landscape Designer, Wetland Biologist, and/or the City of Duvall representative.

Herbicides / Pesticides
Chemical controls shall not be used in the mitigation/restoration area, sensitive areas, or their buffers. However, limited use of herbicides may be approved depending on site-specific conditions, only if approved by the City of Duvall.

Irrigation / Watering
Water shall be provided during the dry season (July 1 through October 15) for the first two years after installation to ensure plant survival and establishment. A temporary above ground irrigation system and/or water truck should provide water. Water should be applied at a rate of 1 inch of water twice per week for year 1 and 1 inch per week during year 2 during dry summer months.

General
The Permittee shall include in general maintenance activities, the replacement of any vandalized or damaged signs, habitat features, fences, or other structural components of this mitigation site.

Environmentally Sensitive Area Designation, Signs & Fencing
The on-site wetland and buffer shall be designated as an Environmentally Sensitive Area (ESA). Environmentally Sensitive Areas are not to be disturbed in compliance with the City of Duvall's restrictions. Concurrent with the development proposal, Sensitive Area Signs will be required and shall be installed 100 feet apart.

Sensitive Area Signs should be affixed to posts of the required fence along the boundary of the buffer. Signage and fencing will be established per the City of Duvall Municipal Code DMC 14.34.060.E.4 and DMC 14.42.110.D. In the vicinity of Lot 37, where the Sensitive Area Boundary overlaps with the pedestrian trail, the fencing will be placed along the east side of the trail.

19.0 PERFORMANCE BOND

A performance bond or assignment of funds shall be provided to City of Duvall for the period of five years from the completion of the project, in the amount of 125 percent of the estimated cost for plant material and labor. Annual monitoring reports and seasonal maintenance will be required to assure the success of this plan. The City shall release the bond at the end of five years, upon successful determination for all portions of this mitigation project. The following is an estimate of plant materials and labor, including mulching and staking. This does not represent a bid to install:

Estimated Project Cost

Quantity of one-gallon plants (at $11.50 per plant)	3,086
Quantity of 8' trees (at $36.00 per plant)	45
Estimated Cost of Plant Material	$37,109.00
Estimated Cost of Monitoring for Years 1-3 & 5	$10,000.00
Estimated Cost of Maintenance for Years 1-3 & 5	$8,000.00
Total Estimated Project Cost	$55,109.00
TOTAL ESTIMATED BOND AMOUNT (125%)	**$68,886.00**

20.0 USE OF THIS REPORT

This Sensitive Area Study is supplied to Rio Vista, LLC as a means of describing jurisdictional wetland conditions, as required by the City of Duvall during the permitting process. This report is based largely on readily observable conditions and to a lesser extent, on readily ascertainable conditions. No attempt has been made to determine hidden or concealed conditions. Reports may be adversely affected due to the physical condition of the site and the difficulty of access, which may lead to observation or probing difficulties.

The laws applicable to wetlands are subject to varying interpretations and may be changed at any time by the courts or legislative bodies. This report is intended to provide information deemed relevant in the applicant's attempt to comply with the laws now in effect.

The work for this report has conformed to the standard of care employed by wetland ecologists. No other representation or warranty is made concerning the work or this report and any implied representation or warranty is disclaimed.

Wetland Resources, Inc.

Nick Whiting
Associate Ecologist

Scott Brainard
Principal Ecologist
Professional Wetland Scientist

21.0 REFERENCES

Cowardin, et al., 1979. Classification of Wetlands and Deepwater Habitats of the United States. U.S.D.I. Fish and Wildlife Service. FWS/OBS-79/31. December 1979.

Environmental Laboratory. (1987). Corps of Engineers Wetlands Delineation Manual, Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, Miss.

Hruby, T. 2004. Washington State wetland rating system for western Washington – Revised. Washington State Department of Ecology Publication # 04-06-025.

National List of Plant Species that Occur in Wetlands, Northwest Region (Region 9). 1996. U.S. Department of the Interior, Fish and Wildlife Service. Washington, D.C.

U.S. Fish and Wildlife Service National Wetlands Inventory wetlands mapper available online at http://www.fws.gov/wetlands/Data/mapper.html.

SalmonScape. Interactive Mapping website administered by the Washington Department of Fish and Wildlife. http://wdfw.wa.gov/mapping/salmonscape/index.html.

U.S. Army Corps of Engineers (2010). "Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region (Version 2.0)," ERDC/EL TR-10-3, U.S. Army Engineer Research and Development Center, Vicksburg, MS.

Washington State Wetlands Identification and Delineation Manual. Washington State Department of Ecology. Publication #96-94. March 1997.

Web Soil Survey. United States Department of Agriculture. Natural Resources Conservation Service. http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm.

Appendix A

WA Dept. of Ecology Wetland Rating Forms for Western Washington

Wetland name or number Wetland A

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Rio Vista Wetland A Date of site visit: 6/15/12

Rated by SB Trained by Ecology? Yes ☑ No ☐ Date of training 10/11/06

SEC: 24 TWNSHP: 26 RNGE: 06 Is S/T/R in Appendix D? Yes ☐ No ☑

Map of wetland unit: Figure ____ Estimated size >1

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ___ II ___ III ✔ ___ IV ___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	14
Score for Hydrologic Functions	10
Score for Habitat Functions	16
TOTAL score for Functions	41

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply___

Final Category (choose the "highest" category from above) III

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✔
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✔	Check if unit has multiple HGM classes present	✔

Wetland name or number Wetland A

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✔
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✔
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✔
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✔

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number Wetland A

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
☑ NO – go to 2 ☐ **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** ☐ **NO – Saltwater Tidal Fringe (Estuarine)** ☐

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
☑ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
☑ NO – go to 4 ☐ **YES –** The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
☑ NO - go to 5 ☐ **YES –** The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

☑ NO - go to 6 ☐ **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO – go to 7 ☑ **YES –** The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☐ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated		*HGM Class to Use in Rating*	
Slope + Riverine	☐	Riverine	☐
Slope + Depressional	☑	Depressional	☑
Slope + Lake-fringe	☐	Lake-fringe	☐
Depressional + Riverine along stream within boundary	☐	Depressional	☐
Depressional + Lake-fringe	☐	Depressional	☐
Salt Water Tidal Fringe and any other class of freshwater wetland	☐	Treat as ESTUARINE under wetlands with special characteristics	☐

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number Wetland A

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	***(see p.38)***
D	D 1.1 Characteristics of surface water flows out of the wetland: ☐ Unit is a depression with no surface water leaving it (no outlet) points = 3 ☑ Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 ☐ Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 ☐ Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	**Figure** 1 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* ☐ YES points = 4 ☑ NO points = 0	0
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) ☑ Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 ☐ Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 ☐ Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 ☐ Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	**Figure** 1 5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* ☐ Area seasonally ponded is > ½ total area of wetland points = 4 ☐ Area seasonally ponded is > ¼ total area of wetland points = 2 ☑ Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	**Figure** 1 0
D	**Total for D 1** *Add the points in the boxes above*	7
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☑ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft of wetland ☐ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☑ Residential, urban areas, golf courses are within 150 ft of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other_____ ☑ **YES** multiplier is **2** ☐ **NO** multiplier is **1**	***(see p. 44)*** multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	14

Wetland name or number Wetland A

D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	***(see p.46)***
D	D 3.1 Characteristics of surface water flows out of the wetland unit ☐ Unit is a depression with no surface water leaving it (no outlet) points = 4 ☑ Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 ☐ Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) ☐ Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* ☐ Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 ☐ The wetland is a "headwater" wetland" points = 5 ☐ Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 ☐ Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 ☐ Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 ☑ Marks of ponding less than 0.5 ft points = 0	0
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* ☐ The area of the basin is less than 10 times the area of unit points = 5 ☑ The area of the basin is 10 to 100 times the area of the unit points = 3 ☐ The area of the basin is more than 100 times the area of the unit points = 0 ☐ Entire unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	5
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ☑ Wetland is in a headwater of a river or stream that has flooding problems ☐ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other_____ ☐ **YES** multiplier is **2** ☐ **NO** multiplier is **1**	***(see p. 49)*** multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	10

Wetland name or number Wetland A

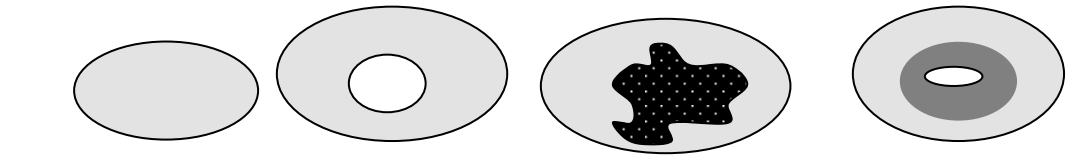
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see p. 72)***	**Figure** 1
Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres. ☐ Aquatic bed ☑ Emergent plants ☐ Scrub/shrub (areas where shrubs have >30% cover) ☑ Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ☐ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* ☐ 4 structures or more points = 4 ☐ 3 structures points = 2 ☑ 2 structures points = 1 ☐ 1 structure points = 0 Map of Cowardin vegetation classes	1
H 1.2. <u>Hydroperiods</u> ***(see p. 73)***	**Figure** 1
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods) ☐ Permanently flooded or inundated ☐ 4 or more types present points = 3 ☑ Seasonally flooded or inundated ☑ 3 types present points = 2 ☐ Occasionally flooded or inundated ☐ 2 types present point = 1 ☑ Saturated only ☐ 1 type present points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☑ Seasonally flowing stream in, or adjacent to, the wetland ☐ ***Lake-fringe wetland* = 2 points** ☐ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3. <u>Richness of Plant Species</u> ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: ☐ > 19 species points = 2 *List species below if you want to:* ☑ 5 - 19 species points = 1 ☐ < 5 species points = 0	1

Total for page 4

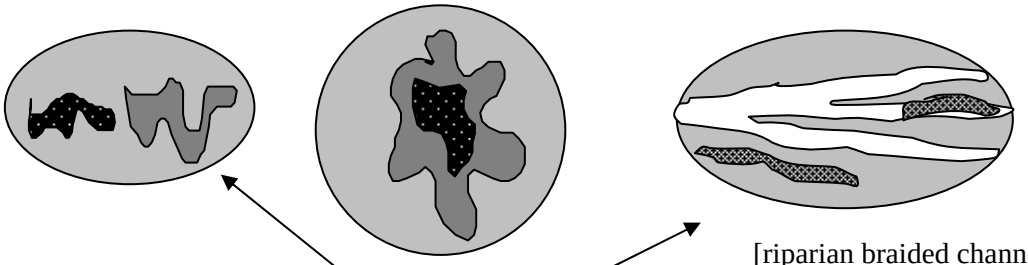
H 1.4. Interspersion of habitats ***(see p. 76)***

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure 1



☐ None = 0 points ☐ Low = 1 point ☑ Moderate = 2 points



[riparian braided channels]

☐ High = 3 points

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

2

H 1.5. Special Habitat Features: ***(see p. 77)***

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

☑ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

☑ Standing snags (diameter at the bottom > 4 inches) in the wetland

☐ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

☐ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)*

☐ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% *stated in early printings of the manual on page 78 is an error.*

2

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

8

Comments

Wetland name or number Wetland A

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer**.** (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** ☐ 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** ☐ No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** ☐ No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** ☐ Heavy grazing in buffer. **Points = 1** ☐ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0**. ☑ Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure** 1 1
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). ☐ YES = **4 points** (*go to H 2.3*) ☑ NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? ☐ YES = **2 points** (*go to H 2.3*) ☐ NO = H 2.2.3 H 2.2.3 Is the wetland: ☐ within 5 mi (8km) of a brackish or salt water estuary OR ☑ within 3 mi of a large field or pasture (>40 acres) OR ☐ within 1 mi of a lake greater than 20 acres? ☑ YES = **1 point** ☐ NO = **0 points**	1

Total for page 2

Wetland name or number Wetland A

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)*** Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.* ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre). ☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*). ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock. ☐ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest. ☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*). ✔ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other. ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*). ✔ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources. ☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).* ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human. ☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft. ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs. ☐ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long. ☐ If wetland has **3 or more** priority habitats **= 4 points** ✔ If wetland has **2** priority habitats = **3 points** ☐ If wetland has **1** priority habitat **= 1 point** ☐ No habitats = 0 points *Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)*	3

Wetland name or number Wetland A

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits*) ***(see p. 84)*** ☐ There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 ☐ The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 ☐ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 ☐ The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 ☐ There is at least 1 wetland within ½ mile. points = 2 ☐ There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	8
TOTAL for H 1 from page 14	8
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	16

Wetland name or number Wetland A

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands ***(see p. 86)*** Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. ☐ YES = Go to SC 1.1 NO ☑ = Go to SC 2.0	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ YES = Category I ☐ NO go to SC 1.2	**Cat. I** ☐
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	☐ **Cat. I** ☐ **Cat. II** ☐ **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** **☐ Cat. I**

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*

S/T/R information from Appendix D ☑ or accessed from WNHP/DNR web site ☐

YES ☐ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☑

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?

☐ YES = Category I NO ☐ not a Heritage Wetland

SC 3.0 Bogs ***(see p. 87)***

Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 ☐ ☑ No - go to Q. 2
2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?

   ☐ Yes - go to Q. 3 ☑ No - Is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?

   ☐ Yes – Is a bog for purpose of rating ☐ No - go to Q. 4

   NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.

1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*

2. ☐ YES = Category I No ☐ Is not a bog for purpose of rating **☐ Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)*

Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.*

☐ **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.

NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.

☐ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

☐ YES = Category I NO ☑ not a forested wetland with special characteristics

Cat. I ☐

SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)*

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks

☐ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)*

☐ YES = Go to SC 5.1 NO ☑ not a wetland in a coastal lagoon

SC 5.1 Does the wetland meets all of the following three conditions?

☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).

☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.

☐ The wetland is larger than 1/10 acre (4350 square feet)

☐ YES = Category I ☐ NO = Category II

☐ **Cat. I**

☐ **Cat. II**

SC 6.0 Interdunal Wetlands ***(see p. 93)*** Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ☐ YES - go to SC 6.1 NO ☑ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: ☐ Long Beach Peninsula- lands west of SR 103 ☐ Grayland-Westport- lands west of SR 105 ☐ Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? ☐ YES = Category II ☐ NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? ☐ YES = Category III	**Cat. II** ☐ **Cat. III** ☐
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	☐ Cat. I ☐ Cat. II ☐ Cat. III ☑ N/A

Wetland name or number Wetland B

WETLAND RATING FORM – WESTERN WASHINGTON
Version 2 - Updated July 2006 to increase accuracy and reproducibility among users
Updated Oct 2008 with the new WDFW definitions for priority habitats

Name of wetland (if known): Rio Vista Wetland B Date of site visit: 6/15/12

Rated by SB Trained by Ecology? Yes ☑ No ☐ Date of training 10/11/06

SEC: 24 TWNSHP: 26 RNGE: 06 Is S/T/R in Appendix D? Yes ☐ No ☑

Map of wetland unit: Figure ____ Estimated size >4

SUMMARY OF RATING

Category based on FUNCTIONS provided by wetland

I ___ II ✔ III ___ IV ___

Category I = Score >=70
Category II = Score 51-69
Category III = Score 30-50
Category IV = Score < 30

Score for Water Quality Functions	26
Score for Hydrologic Functions	16
Score for Habitat Functions	22
TOTAL score for Functions	64

Category based on SPECIAL CHARACTERISTICS of wetland

I___ II___ Does not Apply___

Final Category (choose the "highest" category from above) II

Summary of basic information about the wetland unit

Wetland Unit has Special Characteristics		Wetland HGM Class used for Rating	
Estuarine		**Depressional**	✔
Natural Heritage Wetland		**Riverine**	
Bog		**Lake-fringe**	
Mature Forest		**Slope**	
Old Growth Forest		**Flats**	
Coastal Lagoon		**Freshwater Tidal**	
Interdunal			
None of the above	✔	Check if unit has multiple HGM classes present	✔

Wetland name or number Wetland B

Does the wetland unit being rated meet any of the criteria below?

If you answer YES to any of the questions below you will need to protect the wetland according to the regulations regarding the special characteristics found in the wetland.

Check List for Wetlands That May Need Additional Protection (in addition to the protection recommended for its category)	YES	NO
SP1. *Has the wetland unit been documented as a habitat for any Federally listed Threatened or Endangered **animal or plant** species (T/E species)?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state or federal database.		✔
SP2. *Has the wetland unit been documented as habitat for any State listed Threatened or Endangered **animal** species?* For the purposes of this rating system, "documented" means the wetland is on the appropriate state database. Note: Wetlands with State listed plant species are categorized as Category I Natural Heritage Wetlands (see p. 19 of data form).		✔
SP3. *Does the wetland unit contain individuals of Priority species listed by the WDFW for the state?*		✔
SP4. *Does the wetland unit have a local significance in addition to its functions*? For example, the wetland has been identified in the Shoreline Master Program, the Critical Areas Ordinance, or in a local management plan as having special significance.		✔

To complete the next part of the data sheet you will need to determine the Hydrogeomorphic Class of the wetland being rated.

The hydrogeomorphic classification groups wetlands into those that function in similar ways. This simplifies the questions needed to answer how well the wetland functions. The Hydrogeomorphic Class of a wetland can be determined using the key below. See p. 24 for more detailed instructions on classifying wetlands.

Wetland name or number Wetland B

Classification of Wetland Units in Western Washington

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides (i.e. except during floods)?
☑ NO – go to 2 ☐ **YES** – the wetland class is **Tidal Fringe**

If yes, is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)? **YES – Freshwater Tidal Fringe** ☐ **NO – Saltwater Tidal Fringe (Estuarine)** ☐

*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is rated as an **Estuarine** wetland.* Wetlands that were called estuarine in the first and second editions of the rating system are called Salt Water Tidal Fringe in the Hydrogeomorphic Classification. Estuarine wetlands were categorized separately in the earlier editions, and this separation is being kept in this revision. To maintain consistency between editions, the term "Estuarine" wetland is kept. Please note, however, that the characteristics that define Category I and II estuarine wetlands have changed (see p.).

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.
☑ NO – go to 3 ☐ **YES** – The wetland class is **Flats**

If your wetland can be classified as a "Flats" wetland, use the form for **Depressional** wetlands.

3. Does the entire wetland unit **meet both** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any vegetation on the surface) at least 20 acres (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m)?
☑ NO – go to 4 ☐ **YES –** The wetland class is **Lake-fringe (Lacustrine Fringe)**

4. Does the entire wetland unit **meet all** of the following criteria?
____The wetland is on a slope (*slope can be very gradual*),
____The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks.
____The water leaves the wetland **without being impounded**?
NOTE: *Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3ft diameter and less than 1 foot deep).*
☑ NO - go to 5 ☐ **YES –** The wetland class is **Slope**

5. Does the entire wetland unit **meet all** of the following criteria?

____ The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river

____ The overbank flooding occurs at least once every two years.

NOTE: The riverine unit can contain depressions that are filled with water when the river is not flooding.

☑ NO - go to 6 ☐ **YES** – The wetland class is **Riverine**

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year. *This means that any outlet, if present, is higher than the interior of the wetland.*

☐ NO – go to 7 ☑ **YES –** The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding. The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

☐ NO – go to 8 ☐ **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM clases. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within your wetland. NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM Classes within the wetland unit being rated		*HGM Class to Use in Rating*	
Slope + Riverine	☐	Riverine	☐
Slope + Depressional	☑	Depressional	☑
Slope + Lake-fringe	☐	Lake-fringe	☐
Depressional + Riverine along stream within boundary	☐	Depressional	☐
Depressional + Lake-fringe	☐	Depressional	☐
Salt Water Tidal Fringe and any other class of freshwater wetland	☐	Treat as ESTUARINE under wetlands with special characteristics	☐

If you are unable still to determine which of the above criteria apply to your wetland, or if you have more than 2 HGM classes within a wetland boundary, classify the wetland as **Depressional** for the rating.

Wetland name or number Wetland B

D	**Depressional and Flats Wetlands** **WATER QUALITY FUNCTIONS** - Indicators that the wetland unit functions to improve water quality	**Points** (only 1 score per box)
D	**D 1. Does the wetland unit have the potential to improve water quality?**	***(see p.38)***
D	D 1.1 Characteristics of surface water flows out of the wetland: ☐ Unit is a depression with no surface water leaving it (no outlet) points = 3 ☑ Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 ☐ Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 1 ☐ Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) Provide photo or drawing	**Figure** 1 2
D	S 1.2 The soil 2 inches below the surface (or duff layer) is clay or organic *(use NRCS definitions)* ☑ YES points = 4 ☐ NO points = 0	4
D	D 1.3 Characteristics of persistent vegetation (emergent, shrub, and/or forest Cowardin class) ☑ Wetland has persistent, ungrazed, vegetation > = 95% of area points = 5 ☐ Wetland has persistent, ungrazed, vegetation > = 1/2 of area points = 3 ☐ Wetland has persistent, ungrazed vegetation > = 1/10 of area points = 1 ☐ Wetland has persistent, ungrazed vegetation <1/10 of area points = 0 Map of Cowardin vegetation classes	**Figure** 1 5
D	D1.4 Characteristics of seasonal ponding or inundation. *This is the area of the wetland unit that is ponded for at least 2 months, but dries out sometime during the year. Do not count the area that is permanently ponded. Estimate area as the average condition 5 out of 10 yrs.* ☐ Area seasonally ponded is > ½ total area of wetland points = 4 ☑ Area seasonally ponded is > ¼ total area of wetland points = 2 ☐ Area seasonally ponded is < ¼ total area of wetland points = 0 Map of Hydroperiods	**Figure** 1 2
D	**Total for D 1** *Add the points in the boxes above*	13
D	**D 2. Does the wetland unit have the opportunity to improve water quality?** Answer YES if you know or believe there are pollutants in groundwater or surface water coming into the wetland that would otherwise reduce water quality in streams, lakes or groundwater downgradient from the wetland. *Note which of the following conditions provide the sources of pollutants. A unit may have pollutants coming from several sources, but any single source would qualify as opportunity.* ☐ Grazing in the wetland or within 150 ft ☑ Untreated stormwater discharges to wetland ☐ Tilled fields or orchards within 150 ft of wetland ☐ A stream or culvert discharges into wetland that drains developed areas, residential areas, farmed fields, roads, or clear-cut logging ☑ Residential, urban areas, golf courses are within 150 ft of wetland ☐ Wetland is fed by groundwater high in phosphorus or nitrogen ☐ Other_____ ☑ **YES** multiplier is **2** ☐ **NO** multiplier is **1**	***(see p. 44)*** multiplier 2
D	**TOTAL - Water Quality Functions** Multiply the score from D1 by D2 ***Add score to table on p. 1***	26

Wetland name or number Wetland B

D	**Depressional and Flats Wetlands** HYDROLOGIC FUNCTIONS - Indicators that the wetland unit functions to reduce flooding and stream degradation	**Points** (only 1 score per box)
	D 3. Does the wetland unit have the potential to reduce flooding and erosion?	***(see p.46)***
D	D 3.1 Characteristics of surface water flows out of the wetland unit ☐ Unit is a depression with no surface water leaving it (no outlet) points = 4 ☑ Unit has an intermittently flowing, OR highly constricted permanently flowing outlet points = 2 ☐ Unit is a "flat" depression (Q. 7 on key), or in the Flats class, with permanent surface outflow **and no obvious natural outlet** and/or outlet is a man-made ditch points = 1 (*If ditch is not permanently flowing treat unit as "intermittently flowing"*) ☐ Unit has an unconstricted, or slightly constricted, surface outlet (*permanently flowing*) points = 0	2
D	D 3.2 Depth of storage during wet periods *Estimate the height of ponding above the bottom of the outlet. For units with no outlet measure from the surface of permanent water or deepest part (if dry).* ☐ Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 ☐ The wetland is a "headwater" wetland" points = 5 ☐ Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 ☑ Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 ☐ Unit is flat (yes to Q. 2 or Q. 7 on key) but has small depressions on the surface that trap water points = 1 ☐ Marks of ponding less than 0.5 ft points = 0	3
D	D 3.3 Contribution of wetland unit to storage in the watershed *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* ☐ The area of the basin is less than 10 times the area of unit points = 5 ☑ The area of the basin is 10 to 100 times the area of the unit points = 3 ☐ The area of the basin is more than 100 times the area of the unit points = 0 ☐ Entire unit is in the FLATS class points = 5	3
D	**Total for D 3** *Add the points in the boxes above*	8
D	**D 4. Does the wetland unit have the opportunity to reduce flooding and erosion?** Answer YES if the unit is in a location in the watershed where the flood storage, or reduction in water velocity, it provides helps protect downstream property and aquatic resources from flooding or excessive and/or erosive flows. Answer NO if the water coming into the wetland is controlled by a structure such as flood gate, tide gate, flap valve, reservoir etc. OR you estimate that more than 90% of the water in the wetland is from groundwater in areas where damaging groundwater flooding does not occur. *Note which of the following indicators of opportunity apply.* ☑ Wetland is in a headwater of a river or stream that has flooding problems ☐ Wetland drains to a river or stream that has flooding problems ☐ Wetland has no outlet and impounds surface runoff water that might otherwise flow into a river or stream that has flooding problems ☐ Other_____ ☐ **YES** multiplier is **2** ☐ **NO** multiplier is **1**	***(see p. 49)*** multiplier 2
D	**TOTAL - Hydrologic Functions** Multiply the score from D 3 by D 4 ***Add score to table on p. 1***	16

Wetland name or number Wetland B

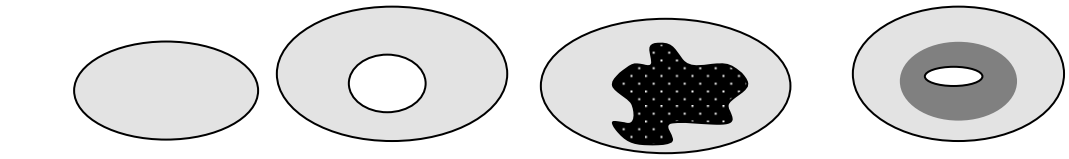
These questions apply to wetlands of all HGM classes. HABITAT FUNCTIONS - Indicators that unit functions to provide important habitat	**Points** (only 1 score per box)
H 1. Does the wetland unit have the <u>potential</u> to provide habitat for many species?	
H 1.1 <u>Vegetation structure</u> ***(see p. 72)***	**Figure** 1
Check the types of vegetation classes present (as defined by Cowardin)- Size threshold for each class is ¼ acre or more than 10% of the area if unit is smaller than 2.5 acres. ☐ Aquatic bed ☑ Emergent plants ☐ Scrub/shrub (areas where shrubs have >30% cover) ☑ Forested (areas where trees have >30% cover) *If the unit has a forested class check if:* ☑ The forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the forested polygon *Add the number of vegetation structures that qualify. If you have:* ☐ 4 structures or more points = 4 ☑ 3 structures points = 2 ☐ 2 structures points = 1 ☐ 1 structure points = 0 Map of Cowardin vegetation classes	2
H 1.2. <u>Hydroperiods</u> ***(see p. 73)***	**Figure** 1
Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ acre to count. (see text for descriptions of hydroperiods) ☐ Permanently flooded or inundated ☐ 4 or more types present points = 3 ☑ Seasonally flooded or inundated ☑ 3 types present points = 2 ☐ Occasionally flooded or inundated ☐ 2 types present point = 1 ☑ Saturated only ☐ 1 type present points = 0 ☐ Permanently flowing stream or river in, or adjacent to, the wetland ☑ Seasonally flowing stream in, or adjacent to, the wetland ☐ ***Lake-fringe wetland* = 2 points** ☐ ***Freshwater tidal wetland* = 2 points** Map of hydroperiods	2
H 1.3. <u>Richness of Plant Species</u> ***(see p. 75)*** Count the number of plant species in the wetland that cover at least 10 ft^2. (*different patches of the same species can be combined to meet the size threshold)* *You do not have to name the species.* *Do not include Eurasian Milfoil, reed canarygrass, purple loosestrife, Canadian Thistle* If you counted: ☐ > 19 species points = 2 *List species below if you want to:* ☑ 5 - 19 species points = 1 ☐ < 5 species points = 0	1

Total for page 5

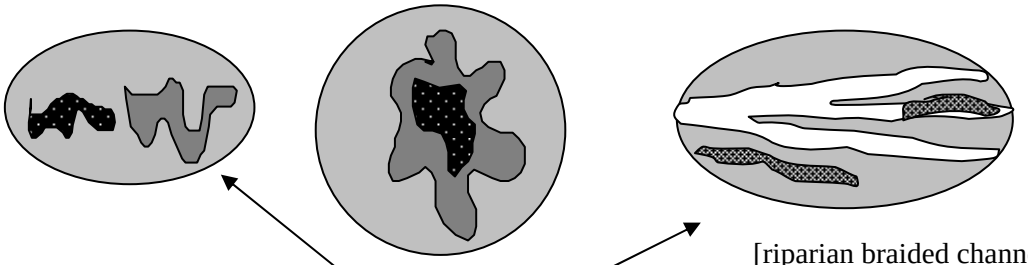
H 1.4. Interspersion of habitats ***(see p. 76)***

Decide from the diagrams below whether interspersion between Cowardin vegetation classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, medium, low, or none.

Figure 1



☐ None = 0 points ☐ Low = 1 point ☑ Moderate = 2 points



[riparian braided channels]

☐ High = 3 points

NOTE: If you have four or more classes or three vegetation classes and open water the rating is always "high". Use map of Cowardin vegetation classes

2

H 1.5. Special Habitat Features: ***(see p. 77)***

Check the habitat features that are present in the wetland. The number of checks is the number of points you put into the next column.

☑ Large, downed, woody debris within the wetland (>4in. diameter and 6 ft long).

☑ Standing snags (diameter at the bottom > 4 inches) in the wetland

☐ Undercut banks are present for at least 6.6 ft (2m) and/or overhanging vegetation extends at least 3.3 ft (1m) over a stream (or ditch) in, or contiguous with the unit, for at least 33 ft (10m)

☐ Stable steep banks of fine material that might be used by beaver or muskrat for denning (>30degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet turned grey/brown)*

☐ At least ¼ acre of thin-stemmed persistent vegetation or woody branches are present in areas that are permanently or seasonally inundated.*(structures for egg-laying by amphibians)*

☐ Invasive plants cover less than 25% of the wetland area in each stratum of plants

NOTE: The 20% *stated in early printings of the manual on page 78 is an error.*

2

H 1. TOTAL Score - potential for providing habitat
Add the scores from H1.1, H1.2, H1.3, H1.4, H1.5

9

Comments

Wetland name or number Wetland B

H 2. Does the wetland unit have the opportunity to provide habitat for many species?	
H 2.1 Buffers ***(see p. 80)*** *Choose the description that best represents condition of buffer of wetland unit. The highest scoring criterion that applies to the wetland is to be used in the rating. See text for definition of "undisturbed."* ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% of circumference. No structures are within the undisturbed part of buffer**.** (relatively undisturbed also means no-grazing, no landscaping, no daily human use) **Points = 5** ☑ 100 m (330 ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 50% circumference. **Points = 4** ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water >95% circumference. **Points = 4** ☐ 100 m (330ft) of relatively undisturbed vegetated areas, rocky areas, or open water > 25% circumference, . **Points = 3** ☐ 50 m (170ft) of relatively undisturbed vegetated areas, rocky areas, or open water for > 50% circumference. **Points = 3** **If buffer does not meet any of the criteria above** ☐ No paved areas (except paved trails) or buildings within 25 m (80ft) of wetland > 95% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** ☐ No paved areas or buildings within 50m of wetland for >50% circumference. Light to moderate grazing, or lawns are OK. **Points = 2** ☐ Heavy grazing in buffer. **Points = 1** ☐ Vegetated buffers are <2m wide (6.6ft) for more than 95% of the circumference (e.g. tilled fields, paving, basalt bedrock extend to edge of wetland **Points = 0**. ☑ Buffer does not meet any of the criteria above. **Points = 1** Aerial photo showing buffers	**Figure** 1 4
H 2.2 Corridors and Connections ***(see p. 81)*** H 2.2.1 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 150 ft wide, has at least 30% cover of shrubs, forest or native undisturbed prairie, that connects to estuaries, other wetlands or undisturbed uplands that are at least 250 acres in size? (*dams in riparian corridors, heavily used gravel roads, paved roads, are considered breaks in the corridor*). ☐ YES = **4 points** (*go to H 2.3*) ☑ NO = go to H 2.2.2 H 2.2.2 Is the wetland part of a relatively undisturbed and unbroken vegetated corridor (either riparian or upland) that is at least 50ft wide, has at least 30% cover of shrubs or forest, and connects to estuaries, other wetlands or undisturbed uplands that are at least 25 acres in size? **OR** a **Lake-fringe** wetland, if it does not have an undisturbed corridor as in the question above? ☑ YES = **2 points** (*go to H 2.3*) ☐ NO = H 2.2.3 H 2.2.3 Is the wetland: ☐ within 5 mi (8km) of a brackish or salt water estuary OR ☐ within 3 mi of a large field or pasture (>40 acres) OR ☐ within 1 mi of a lake greater than 20 acres? ☐ YES = **1 point** ☐ NO = **0 points**	2

Total for page 6

Wetland name or number Wetland B

H 2.3 Near or adjacent to other priority habitats listed by WDFW ***(see new and complete descriptions of WDFW priority habitats, and the counties in which they can be found, in the PHS report http://wdfw.wa.gov/hab/phslist.htm)***

Which of the following priority habitats are within 330ft (100m) of the wetland unit? *NOTE: the connections do not have to be relatively undisturbed.*

- ☐ **Aspen Stands:** Pure or mixed stands of aspen greater than 0.4 ha (1 acre).
- ☐ **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report p. 152*).
- ☐ **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.
- ✔ **Old-growth/Mature forests:** (Old-growth west of Cascade crest) Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 20 trees/ha (8 trees/acre) > 81 cm (32 in) dbh or > 200 years of age. **(**Mature forests) Stands with average diameters exceeding 53 cm (21 in) dbh; crown cover may be less that 100%; crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80 - 200 years old west of the Cascade crest.
- ☐ **Oregon white Oak:** Woodlands Stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158*).
- ✔ **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.
- ☐ **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161*).
- ✔ **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.
- ☐ **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report: pp. 167-169 and glossary in Appendix A).*
- ☐ **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.
- ☐ **Cliffs:** Greater than 7.6 m (25 ft) high and occurring below 5000 ft.
- ☐ **Talus:** Homogenous areas of rock rubble ranging in average size 0.15 - 2.0 m (0.5 - 6.5 ft), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.
- ✔ **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 51 cm (20 in) in western Washington and are > 2 m (6.5 ft) in height. Priority logs are > 30 cm (12 in) in diameter at the largest end, and > 6 m (20 ft) long.

☑ If wetland has **3 or more** priority habitats **= 4 points**
☐ If wetland has **2** priority habitats = **3 points**
☐ If wetland has **1** priority habitat **= 1 point** ☐ No habitats = 0 points

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list. Nearby wetlands are addressed in question H 2.4)

4

Wetland name or number Wetland B

H 2.4 Wetland Landscape *(choose the **one** description of the landscape around the wetland that best fits*) ***(see p. 84)*** ☐ There are at least 3 other wetlands within ½ mile, and the connections between them are relatively undisturbed (light grazing between wetlands OK, as is lake shore with some boating, but connections should NOT be bisected by paved roads, fill, fields, or other development. points = 5 ☐ The wetland is Lake-fringe on a lake with little disturbance and there are 3 other lake-fringe wetlands within ½ mile points = 5 ☑ There are at least 3 other wetlands within ½ mile, BUT the connections between them are disturbed points = 3 ☐ The wetland is Lake-fringe on a lake **with** disturbance and there are 3 other lake-fringe wetland within ½ mile points = 3 ☐ There is at least 1 wetland within ½ mile. points = 2 ☐ There are no wetlands within ½ mile. points = 0	3
H 2. TOTAL Score - opportunity for providing habitat *Add the scores from H2.1,H2.2, H2.3, H2.4*	13
TOTAL for H 1 from page 14	9
Total Score for Habitat Functions – add the points for H 1, H 2 and record the result on p. 1	22

Wetland name or number Wetland B

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Please determine if the wetland meets the attributes described below and circle the appropriate answers and Category.

Wetland Type *Check off any criteria that apply to the wetland. Circle the Category when the appropriate criteria are met.*	**Category**
SC 1.0 Estuarine wetlands ***(see p. 86)*** Does the wetland unit meet the following criteria for Estuarine wetlands? ☐ The dominant water regime is tidal, ☐ Vegetated, and ☐ With a salinity greater than 0.5 ppt. ☐ YES = Go to SC 1.1 NO ☑ = Go to SC 2.0	
SC 1.1 Is the wetland unit within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? ☐ YES = Category I ☐ NO go to SC 1.2	**Cat. I** ☐
SC 1.2 Is the wetland unit at least 1 acre in size and meets at least two of the following three conditions? ☐ YES = Category I ☐ NO = Category II ☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. If the non-native *Spartina* spp. are the only species that cover more than 10% of the wetland, then the wetland should be given a dual rating (I/II). The area of Spartina would be rated a Category II while the relatively undisturbed upper marsh with native species would be a Category I. Do not, however, exclude the area of Spartina in determining the size threshold of 1 acre. ☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. ☐ The wetland has at least 2 of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands.	☐ **Cat. I** ☐ **Cat. II** ☐ **Dual rating I/II**

SC 2.0 Natural Heritage Wetlands ***(see p. 87)*** ☐ **Cat. I**

Natural Heritage wetlands have been identified by the Washington Natural Heritage Program/DNR as either high quality undisturbed wetlands or wetlands that support state Threatened, Endangered, or Sensitive plant species.

SC 2.1 Is the wetland unit being rated in a Section/Township/Range that contains a Natural Heritage wetland? *(this question is used to screen out most sites before you need to contact WNHP/DNR)*

S/T/R information from Appendix D ☑ or accessed from WNHP/DNR web site ☐

YES ☐ – contact WNHP/DNR (see p. 79) and go to SC 2.2 NO ☑

SC 2.2 Has DNR identified the wetland as a high quality undisturbed wetland or as or as a site with state threatened or endangered plant species?

☐ YES = Category I NO ☐ not a Heritage Wetland

SC 3.0 Bogs ***(see p. 87)***

Does the wetland unit (**or any part of the unit**) meet both the criteria for soils and vegetation in bogs? *Use the key below to identify if the wetland is a bog.* ***If you answer yes you will still need to rate the wetland based on its functions.***

1. Does the unit have organic soil horizons (i.e. layers of organic soil), either peats or mucks, that compose 16 inches or more of the first 32 inches of the soil profile? (See Appendix B for a field key to identify organic soils)? Yes - go to Q. 3 ☐ ☑ No - go to Q. 2
2. Does the unit have organic soils, either peats or mucks that are less than 16 inches deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on a lake or pond?

   ☐ Yes - go to Q. 3 ☑ No - Is not a bog for purpose of rating
3. Does the unit have more than 70% cover of mosses at ground level, AND other plants, if present, consist of the "bog" species listed in Table 3 as a significant component of the vegetation (more than 30% of the total shrub and herbaceous cover consists of species in Table 3)?

   ☐ Yes – Is a bog for purpose of rating ☐ No - go to Q. 4

   NOTE: If you are uncertain about the extent of mosses in the understory you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16" deep. If the pH is less than 5.0 and the "bog" plant species in Table 3 are present, the wetland is a bog.

1. Is the unit forested (> 30% cover) with sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Englemann's spruce, or western white pine, WITH any of the species (or combination of species) on the bog species plant list in Table 3 as a significant component of the ground cover *(> 30% coverage of the total shrub/herbaceous cover)?*

2. ☐ YES = Category I No ☐ Is not a bog for purpose of rating ☐ **Cat. I**

SC 4.0 Forested Wetlands *(see p. 90)*

Does the wetland unit have at least 1 acre of forest that meet one of these criteria for the Department of Fish and Wildlife's forests as priority habitats? *If you answer yes you will still need to rate the wetland based on its functions.*

☐ **Old-growth forests**: (west of Cascade crest) Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/acre (20 trees/hectare) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 inches (81 cm) or more.

NOTE: The criterion for dbh is based on measurements for upland forests. Two-hundred year old trees in wetlands will often have a smaller dbh because their growth rates are often slower. The DFW criterion is and "OR" so old-growth forests do not necessarily have to have trees of this diameter.

☐ **Mature forests**: (west of the Cascade Crest) Stands where the largest trees are 80 – 200 years old OR have average diameters (dbh) exceeding 21 inches (53cm); crown cover may be less that 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth.

☐ YES = Category I NO ☑ not a forested wetland with special characteristics

Cat. I ☐

SC 5.0 Wetlands in Coastal Lagoons *(see p. 91)*

Does the wetland meet all of the following criteria of a wetland in a coastal lagoon?

☐ The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks

☐ The lagoon in which the wetland is located contains surface water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)*

☐ YES = Go to SC 5.1 NO ☑ not a wetland in a coastal lagoon

SC 5.1 Does the wetland meets all of the following three conditions?

☐ The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of invasive plant species (see list of invasive species on p. 74).

☐ At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland.

☐ The wetland is larger than 1/10 acre (4350 square feet)

☐ YES = Category I ☐ NO = Category II

☐ **Cat. I**

☐ **Cat. II**

SC 6.0 Interdunal Wetlands ***(see p. 93)*** Is the wetland unit west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ☐ YES - go to SC 6.1 NO ☑ not an interdunal wetland for rating ***If you answer yes you will still need to rate the wetland based on its functions.*** In practical terms that means the following geographic areas: ☐ Long Beach Peninsula- lands west of SR 103 ☐ Grayland-Westport- lands west of SR 105 ☐ Ocean Shores-Copalis- lands west of SR 115 and SR 109 SC 6.1 Is the wetland one acre or larger, or is it in a mosaic of wetlands that is once acre or larger? ☐ YES = Category II ☐ NO – go to SC 6.2 SC 6.2 Is the unit between 0.1 and 1 acre, or is it in a mosaic of wetlands that is between 0.1 and 1 acre? ☐ YES = Category III	**Cat. II** ☐ **Cat. III** ☐
Category of wetland based on Special Characteristics *Choose the "highest" rating if wetland falls into several categories, and record on p. 1.* If you answered NO for all types enter "Not Applicable" on p.1	☐ Cat. I ☐ Cat. II ☐ Cat. III ☑ N/A

Appendix B

US Army Corps of Engineers Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Rio Vista City/County: Duvall/ King County Sampling Date: 5/31/07

Applicant/Owner: Rio Vista, LLC State: WA Sampling Point: 1

Investigator(s): LE/JK Section, Township, Range: S24, T26N, R6E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): <5%

Subregion (LRR): LRR-A Lat: Long: Datum:

Soil Map Unit Name: Tokul Gravelly Loam, 6-15 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☑ Hydric Soil Present? Yes ☐ No ☑ Wetland Hydrology Present? Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size:)			
1. Rubus armeniacus	5	Y	FacU
2.			
3.			
4.			
5.			
	5 = Total Cover		
Herb Stratum (Plot size:)			
1. Hypochaeris radicata	15	Y	NoI
2. Plantago lanceolata	10	Y	Fac
3. Ranunculus repens	10	Y	FacW
4. Trifolium pratense	10	Y	FacU
5. Trifolium repens	5	N	Fac
6.			
7.			
8.			
9.			
10.			
11.			
	50 = Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/3						Grsalo	dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Rio Vista City/County: Duvall/ King County Sampling Date: 5/31/07

Applicant/Owner: Rio Vista, LLC State: WA Sampling Point: 2

Investigator(s): LE/JK Section, Township, Range: S24, T26N, R6E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): <5%

Subregion (LRR): LRR-A Lat: Long: Datum:

Soil Map Unit Name: Tokul Gravelly Loam, 6-15 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ Hydric Soil Present? Yes ☑ No ☐ Wetland Hydrology Present? Yes ☑ No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lucida	10	Yes	FacW
2. Populus balsamifera	5	Yes	Fac
3.			
4.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Rubus armeniacus	10	Yes	FacU
2.			
3.			
4.			
5.			
	10	= Total Cover	
Herb Stratum (Plot size:)			
1. Juncus effusus	70	Yes	FacW
2. Carex obnupta	5	No	Obl
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/1						Grsalo	sat

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☑ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☐ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): _____

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Rio Vista City/County: Duvall/ King County Sampling Date: 5/31/07

Applicant/Owner: Rio Vista, LLC State: WA Sampling Point: 3

Investigator(s): LE/JK Section, Township, Range: S24, T26N, R6E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): <5%

Subregion (LRR): LRR-A Lat: Long: Datum:

Soil Map Unit Name: Tokul Gravelly Loam, 6-15 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ Hydric Soil Present? Yes ☐ No ☑ Wetland Hydrology Present? Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Thuja plicata	5	Yes	Fac
2. Populus balsamifera	5	Yes	Fac
3. Alnus rubra	5	Yes	Fac
4.			
	15	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Rubus armeniacus	40	Yes	FacU
2.			
3.			
4.			
5.			
	40	= Total Cover	
Herb Stratum (Plot size:)			
1. Trifolium repens	5	Yes	Fac
2. Taraxacum officinale	5	Yes	FacU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	10	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 2/2						salo	dry

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Rio Vista City/County: Duvall/ King County Sampling Date: 5/31/07

Applicant/Owner: Rio Vista, LLC State: WA Sampling Point: 4

Investigator(s): LE/JK Section, Township, Range: S24, T26N, R6E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): <5%

Subregion (LRR): LRR-A Lat: Long: Datum:

Soil Map Unit Name: Tokul Gravelly Loam, 6-15 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ Hydric Soil Present? Yes ☐ No ☑ Wetland Hydrology Present? Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Thuja plicata	70	Yes	Fac
2. Tsuga heterophylla	15	No	FacU
3. Acer macrophyllum	15	No	FacU
4. Alnus rubra	5	No	Fac
	105	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Rubus spectabilis	30	Yes	Fac
2. Rubus armeniacus	10	No	FacU
3. Acer circinatum	10	No	FacU
4. Rhamnus purshiana	5	No	Fac
5.			
	55	= Total Cover	
Herb Stratum (Plot size:)			
1. Tolmiea menziesii	20	Yes	Fac
2. Pteridium aquilinum	5	Yes	FacU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	25	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/3						salo	moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Rio Vista City/County: Duvall/ King County Sampling Date: 5/31/07

Applicant/Owner: Rio Vista, LLC State: WA Sampling Point: 5

Investigator(s): LE/JK Section, Township, Range: S24, T26N, R6E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): <5%

Subregion (LRR): LRR-A Lat: Long: Datum:

Soil Map Unit Name: Tokul Gravelly Loam, 6-15 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☑ Hydric Soil Present? Yes ☐ No ☑ Wetland Hydrology Present? Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Thuja plicata	50	Yes	Fac
2. Alnus rubra	10	No	Fac
3.			
4.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Acer circinatum	20	Yes	FacU
2. Rubus armeniacus	15	Yes	FacU
3. Rubus spectabilis	10	Yes	Fac
4. Corylus cornuta	5	No	FacU
5.			
	50	= Total Cover	
Herb Stratum (Plot size:)			
1. Pteridium aquilinum	5	Yes	FacU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	5	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks:

SOIL

Sampling Point: 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2						salo	moist

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☐ No ☑

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Rio Vista City/County: Duvall/ King County Sampling Date: 5/31/07

Applicant/Owner: Rio Vista, LLC State: WA Sampling Point: 6

Investigator(s): LE/JK Section, Township, Range: S24, T26N, R6E

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): none Slope (%): <5%

Subregion (LRR): LRR-A Lat: Long: Datum:

Soil Map Unit Name: Tokul Gravelly Loam, 6-15 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☑ No ☐ Hydric Soil Present? Yes ☑ No ☐ Wetland Hydrology Present? Yes ☑ No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size:)	Absolute % Cover	Dominant Species?	Indicator Status
1. Thuja plicata	20	Yes	Fac
2. Alnus rubra	20	Yes	Fac
3.			
4.			
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size:)			
1. Rubus spectabilis	80	Yes	Fac
2. Salix lucida	30	Yes	FacW
3.			
4.			
5.			
	110	= Total Cover	
Herb Stratum (Plot size:)			
1. Ranunculus repens	30	Yes	FacW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	30	= Total Cover	
Woody Vine Stratum (Plot size:)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species	x 1 = 0
FACW species	x 2 = 0
FAC species	x 3 = 0
FACU species	x 4 = 0
UPL species	x 5 = 0
Column Totals: 0 (A)	0 (B)

Prevalence Index = B/A = 4

Hydrophytic Vegetation Indicators:

- ☐ Rapid Test for Hydrophytic Vegetation
- ☐ Dominance Test is >50%
- ☐ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Wetland Non-Vascular Plants[1]
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks:

SOIL

Sampling Point: 6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/1						salo	sat

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Depleted Below Dark Surface (A11)
- ☑ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10)
- ☐ Red Parent Material (TF2)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:_____

Depth (inches):_____

Hydric Soil Present? Yes ☑ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ☐ Salt Crust (B11)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Stunted or Stressed Plants (D1) (**LRR A**)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)
- ☐ Raised Ant Mounds (D6) (**LRR A**)
- ☐ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____

Water Table Present? Yes ☐ No ☑ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ☑ No ☐ Depth (inches): _____

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Appendix C
Groundwater Monitoring Data

HYDROWELL MONITORING

PROJECT NAME/FILE NUMBER: Rio Vista - WRI #

measurements in inches

DATE: 02.07.08	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO GROUND	15.25	na	15.5	14.5	12.5	16	17.5
WELL TOP TO WATER	18		15	13	25.75	26.5	26.5
GROUND TO WATER	2.75		-0.5	-1.5	13.25	10.5	9

DATE: 02.26.08 - NO	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	29.5		20.5	15.5	30.5	29	31
GROUND TO WATER	14.25		5	1	18	13	13.5

DATE: 02.29.08 - AB	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	28		21	16	28.5	28	29
GROUND TO WATER	12.75		5.5	1.5	16	12	11.5

DATE: 03.04.08 - AB	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	20.5		16	14.5	25	25.5	28.5
GROUND TO WATER	5.25		0.5	0	12.5	9.5	11

DATE: 03.06.08 - JRK	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	26.5		19	15	28.75	28.75	29.5
GROUND TO WATER	11.25		3.5	0.5	16.25	12.75	12

DATE: 03.11.08 - JRK	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	22.25		16.75	14.5	26.5	26.75	29
GROUND TO WATER	7		1.25	0	14	10.75	11.5

DATE: 03.13.08 - JRK	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	21.5		16	14.25	25	24.5	27.25
GROUND TO WATER	6.25		1.25	-0.25	12.5	8.5	9.75

DATE: 03.18.08 - JRK	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	18.25		15.25	13.75	26	24	24.75
GROUND TO WATER	3		-0.25	-0.75	13.5	8	7.25

DATE: 03.20.08 - JRK	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	24		15.5	14	27.5	25.25	26.25
GROUND TO WATER	8.75		0	-0.5	15	9.25	8.75

HYDROWELL MONITORING

PROJECT NAME/FILE NUMBER: Rio Vista - **WRI # 07023**

measurements in inches

DATE: 04.01.08 - JRK	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO GROUND	15.25	na	15.5	14.5	12.5	16	17.5
WELL TOP TO WATER	18.75		14.5	14	23.5	19.75	19.25
GROUND TO WATER	3.5		-1	-0.5	11	3.75	1.75

DATE: 04.03.08 - JRK	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	22		14.5	12.25	26.5	23.75	23.75
GROUND TO WATER	6.75		-1	-2.25	14	7.75	6.25

DATE: 04.08.08 - JRK	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	21.25		15	13.5	25.75	22.5	24.75
GROUND TO WATER	6		-0.5	-1	13.25	6.5	7.25

DATE: 04.10.08 - JRK	WELL 1	WELL 2	WELL 3	WELL 4	WELL B1	WELL B2	WELL B3
WELL TOP TO WATER	25.5		16	13	27.25	25.25	26.5
GROUND TO WATER	10.25		0.5	-1.5	14.75	9.25	9

Appendix D

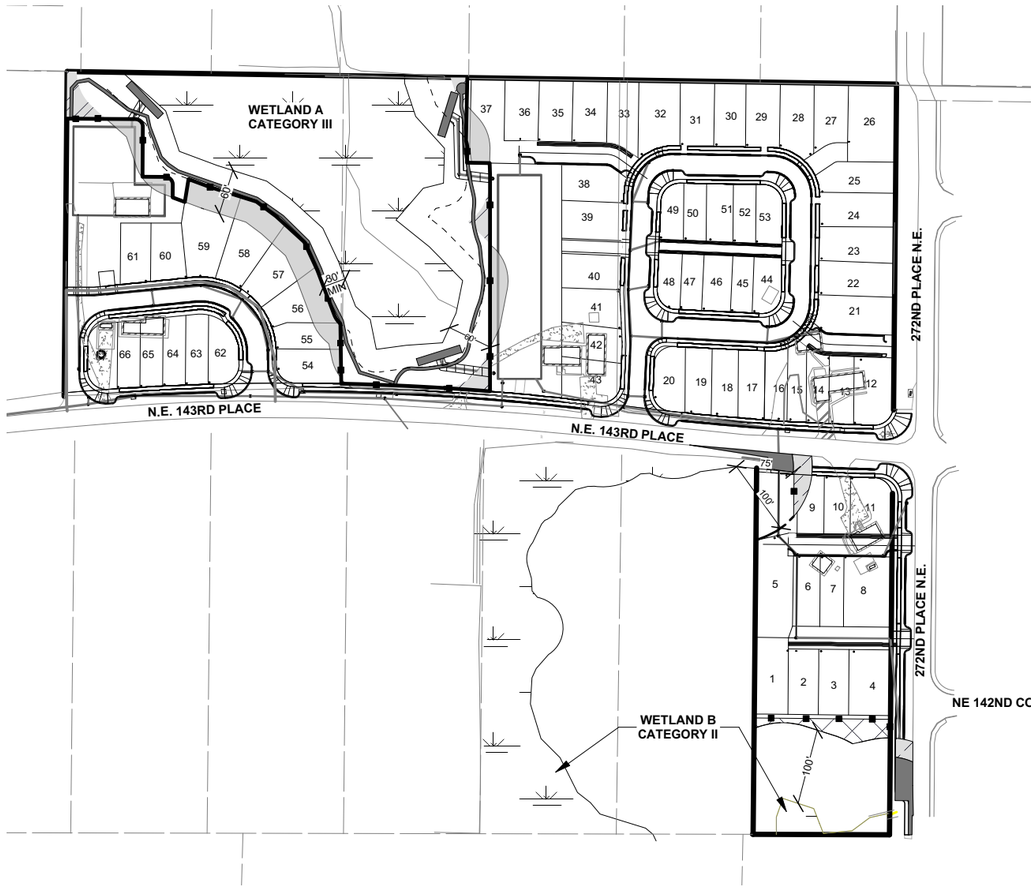
Sensitive Area Study Maps

BUFFER REDUCTION, ADDITION, IMPACT, AND AVERAGING MAP

RIO VISTA

PORTION OF SECTION 24, TOWNSHIP 26N, RANGE 06E, W.M.

WETLAND A IMPACTS AND MITIGATION	
BUFFER REDUCTION	15,966 SQUARE FEET
TEMPORARY BUFFER IMPACT	2,315 SQUARE FEET
PERMANENT BUFFER IMPACT	6,499 SQUARE FEET
ADDITIONAL BUFFER	3,601 SQUARE FEET
BUFFER ENHANCEMENT	47,232 SQUARE FEET
WETLAND ENHANCEMENT	26,128 SQUARE FEET



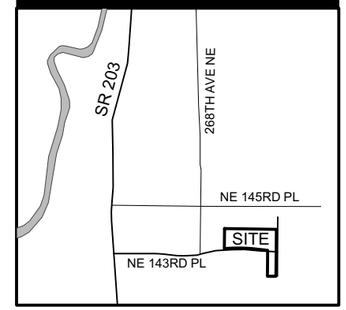
LEGEND

- PERMANENT BUFFER IMPACT AREA
- TEMPORARY BUFFER IMPACT AREA (TO BE RESTORED WITH SHRUBS)
- BUFFER REDUCTION
- ADDITONAL BUFFER DESIGNATION AREA
- BUFFER AVERAGING (SUBTRACTION)
- BUFFER AVERAGING (ADDITION)
- BUFFER ENHANCEMENT AREA
- WETLAND
- SENSITIVE AREA TRACT BOUNDARY
- MINIMUM BUFFER
- SENSITIVE AREA SIGN

Scale 1" = 200'

0 100 200 300 400

VICINITY MAP



WETLAND B IMPACTS AND MITIGATION	
BUFFER AVERAGING (SUBTRACTION)	1,480 SQUARE FEET
BUFFER AVERAGING (ADDITION)	3,181 SQUARE FEET
PERMANENT BUFFER IMPACT	2,643 SQUARE FEET

Wetland Resources, Inc.
Delineation / Mitigation / Restoration / Habitat Creation / Permit Assistance
9505 19th Avenue S.E. Suite 106 Everett,Washington 98208
Phone: (425) 337-3174
Fax: (425) 337-3045
Email: mailbox@wetlandresources.com

BUFFER REDUCTION, ADDITION, IMPACT, AND AVERAGING MAP
Rio Vista
Duvall, Washington

Rio Vista, LLC
Attn: Mike Reid
P.O. Box 1282
Bellevue, WA 98009

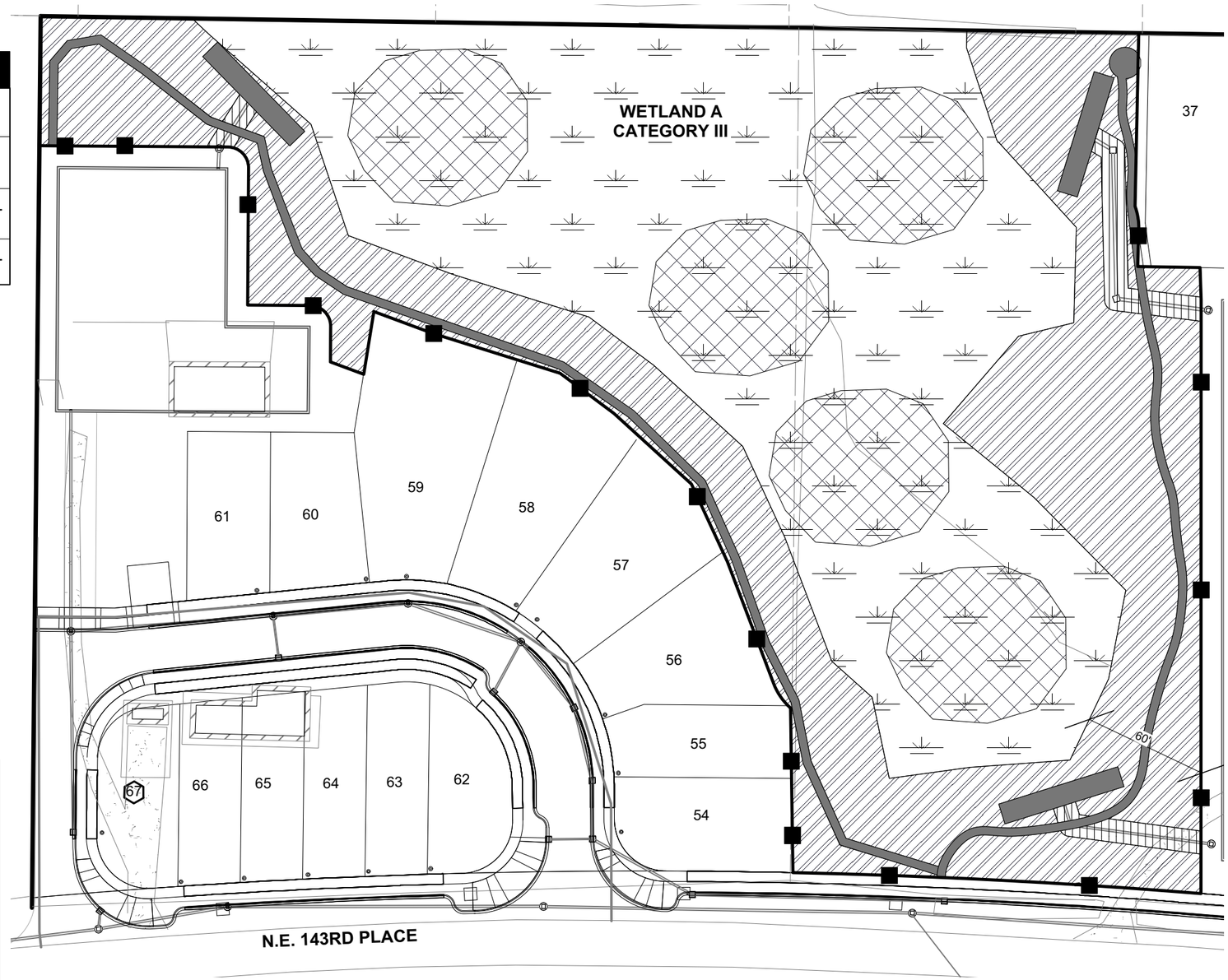
Sheet 1/2
WRI Job # 15135
Drawn by: NW
Rev. 1: April 11, 2016

WETLAND AND BUFFER ENHANCEMENT PLAN MAP

RIO VISTA

PORTION OF SECTION 24, TOWNSHIP 26N, RANGE 06E, W.M.

MITIGATION PLANTING AREAS	
TEMPORARY BUFFER IMPACT	2,315 SQUARE FEET
PERMANENT BUFFER IMPACT	6,499 SQUARE FEET
BUFFER ENHANCEMENT	47,232 SQUARE FEET
WETLAND ENHANCEMENT	26,128 SQUARE FEET



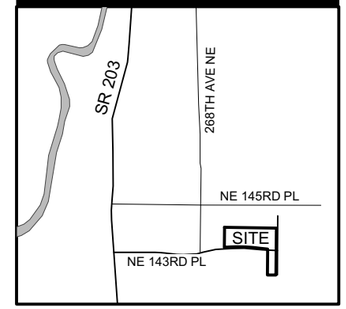
Scale 1" = 60'

0 30 60 90 120

LEGEND

- PERMANENT BUFFER IMPACT AREA
- TEMPORARY BUFFER IMPACT AREA (TO BE RESTORED WITH SHRUBS)
- BUFFER AVERAGING (ADDITION)
- BUFFER ENHANCEMENT AREA
- WETLAND
- SENSITIVE AREA TRACT BOUNDARY
- SENSITIVE AREA SIGN

VICINITY MAP



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WETLAND AND BUFFER ENHANCEMENT PLAN MAP
Rio Vista
Duvall, Washington

Rio Vista, LLC
Attn: Mike Reid
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Sheet 2/2
WRI Job # 15135
Drawn by: NW
Rev. 1: April 11, 2016